00037721

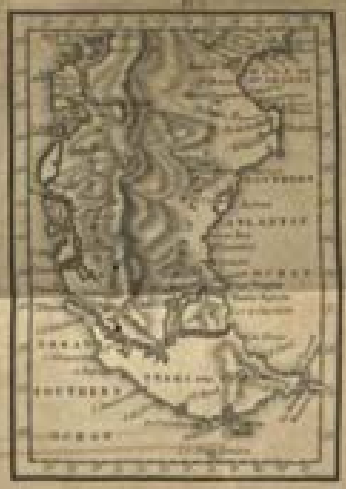
THE

ASIATIC SOCIETY OF BOMBAY

Town Hall, Bombay.

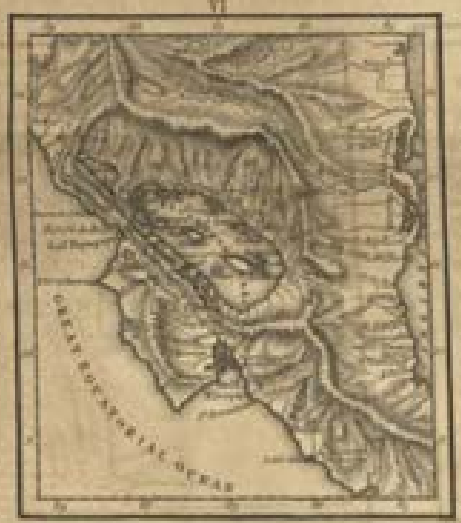
Digitized with financial assistance from the
Government of Maharashtra
on 04 January, 2016

RR-1:20



Points of Separation and Projected Communications between the SOUTH SEA (AND) Atlantic Ocean.

I.
II.
III.
IV.
V.
VI.
VII.
VIII.



Literary Society of Bombay

Political Essay

ON THE

KINGDOM OF NEW SPAIN.

CONTAINING

Researches relative to the Geography of Mexico, the Extent of its Surface and its political Division into Intendancies, the physical Aspect of the Country, the Population, the State of Agriculture and Manufacturing and Commercial Industry, the Canals projected between the South Sea and Atlantic Ocean, the Crown Revenues, the Quantity of the precious Metals which have flowed from Mexico into Europe and Asia, since the Discovery of the New Continent, and the Military Defence of New Spain.

BY ALEXANDER DE HUMBOLDT.

WITH

PHYSICAL SECTIONS AND MAPS.

FOUNDED ON ASTRONOMICAL OBSERVATIONS, AND TRIGONOMETRICAL AND BAROMETRICAL MEASUREMENTS.

37721

TRANSLATED FROM THE ORIGINAL FRENCH

BY JOHN BLACK.

VOL. IV.

RR-C-20

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN, PATERNOSTER-ROW; AND H. COLBURN, CONDUIT STREET.

1811.

Political Essay

ON THE

KINGDOM OF NEW SPAIN.

CONTAINING

Researches relative to the Geography of Mexico, the Extent of its Surface and its political Division into Intendancies, the physical Aspect of the Country, the Population, the State of Agriculture and Manufacturing and Commercial Industry, the Canals projected between the South Sea and Atlantic Ocean, the Crown Revenues, the Quantity of the precious Metals which have flowed from Mexico into Europe and Asia, since the Discovery of the New Continent, and the Military Defence of New Spain.

BY ALEXANDER DE HUMBOLDT.

WITH

PHYSICAL SECTIONS AND MAPS,

FOUNDED ON ASTRONOMICAL OBSERVATIONS, AND TRIGONOMETRICAL AND BAROMETRICAL MEASUREMENTS.

37721

TRANSLATED FROM THE ORIGINAL FRENCH

BY JOHN BLACK.

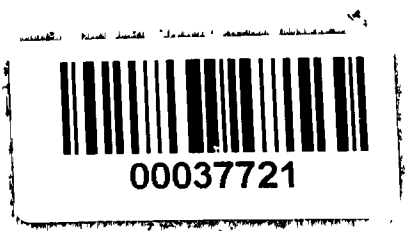
VOL. IV.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, ORME, AND BROWN, PATERNOSTER-ROW; AND H. COLBURN, CONDUIT STREET.

1811.

330.946
37721



Bryer, Printer, Bridge Street, Blackfriars, London.

BOOK V.

2019

CONTINUATION OF CHAPTER XII.

THE roads of Mexico are either carried along the central table land itself, from Oaxaca to Santa Fe, or they lead from the table land towards the coasts. The former are for carrying on a communication between the towns on the ridge of the mountains, in the coldest and most populous region of the kingdom; and the latter are destined for foreign commerce, and the relations which subsist between the interior and the ports of Vera Cruz and Acapulco; besides facilitating an exchange between the productions of the mountains and the burning plains of the coast. The roads of the table land running from the S.S.E. to the N.N.W., which from the total configuration of the country, we might call *longitudinal*, are very easily kept up. We shall not repeat in this place what we have already stated* in the preceding chapter, relative to the extent and continuity of the high plains of Anahuac, where we find neither crevice nor

* Introduction and chapters III and VIII.

ravin, and to the progressive fall of the table land from 2500 to 800 metres* of absolute height. Carriages may run from Mexico to Santa Fe, in an extent which exceeds the length which the chain of the Alps would have if it was prolonged without interruption from Geneva to the shores of the Black Sea. In fact, the central table land is travelled in four wheel carriages in all directions, from the capital to Guanaxuato, Durango, Chihuahua, Valladolid, Guadalaxara, and Perote; but in the present bad state of the roads, waggons are not established for the conveyance of goods. They give the preference to the employment of beasts of burden; and thousands of horses and mules cover in long files (*requas*) the roads of Mexico. A considerable number of Mestizoes and Indians are employed to conduct these caravans. Preferring a wandering life to every sort of sedentary occupation, they pass the night in the open air, or in sheds, (*tambos*, or *casas de communidad*) which are constructed in the middle of the villages for the convenience of travellers. The mules feed at liberty in the Savannahs; but when the great droughts have parched up the grass, they feed them on maize either in herb, (*zacate*) or in grain.

The roads which lead from the interior table

* From 8201 to 2624 feet. *Trans.*

land to the coasts, and which I call transversal, are the most difficult, and chiefly deserve the attention of government. The roads from Mexico to Vera Cruz and Acapulco, from Zacatecas to New Santander, from Guadalaxara to San Blas, from Valladolid to the Port of Colima, and from Durango to Mazatlan passing by the western branch of the Sierra Madre, belong all to this class. The roads by which the capital carries on a communication with the ports of Acapulco and Vera Cruz, are naturally the most frequented. The value of the precious metals, of the agricultural productions, and of the goods of Europe and Asia which flow through these two channels, amounts to the total sum of 320 millions of francs per annum*. These treasures pass along a road which resembles *that of Airolo at the hospital* of Saint Gothard. From the village of Vigas to L'Encero, the road to Vera Cruz is frequently nothing but a narrow and crooked path, and the most difficult, perhaps, in all America, with the exception of that, by which the goods of Europe are transported from Honda to Santa Fe de Bogota, and from Guayaquil to Quito.

The productions from the Philippine Islands and Peru, arrive by the road from Mexico to Acapulco. It is carried along a less rapid slope

* £13,334,400 sterling. *Trans.*

of the Cordilleras, than the road leading from the capital to Vera Cruz. The slightest glance of the physical sections in the atlas accompanying this work, will suffice to prove the justice of this assertion. In the European road, as we have already observed*, we remain from the valley of Mexico to beyond Perote, on the central plain, at an elevation of 2300 metres† above the level of the ocean; and from that village we descend with extreme rapidity to the ravin of the *Plan del Rio*, to the west of Rinconada. On the other hand on the road from Acapulco, which we designate by the name of the Asiatic Road, the descent begins at a distance of eight leagues from Mexico, on the southern slope of the basaltic mountain of Guarda. With the exception of that part which passes through the forest of Guchilaque, it might be easy to render this road fit for carriages without any great expence of labour. It is broad and kept in tolerably good order from Acapulco to the table land of Chilpanzingo; but it becomes narrow and extremely bad in advancing towards the capital, especially from Cuernavaca to Guchilaque, and from thence to the summit of the high mountain called *la Cruz del Marques*. The difficulties which are the greatest obstacles to

* Vol. I. p. 58.

† 7545 feet. *Trans.*

communication, between the capital and the port of Acapulco, arise from the sudden swell of the waters of two rivers, the Papagallo and the Rio de Mescala. These torrents, which in times of drought are not more than 60 metres in breadth*, are from 250 to 300† in the rainy season. At this period of the great swells, the *loads* are frequently stopt for seven or eight days on the banks of the Papagallo, which the muleteers dare not attempt to ford. I have still seen the remains of pillars constructed of enormous hewn stones, which the current had carried away before the arches were completed. A project was entertained in 1803, for making a new endeavour to throw a large stone bridge over the Rio Papagallo; and the government destined nearly *half a million* of francs‡ for this undertaking, which would have been of so great importance to the commerce of Mexico with the Philippine Islands. The Rio de Mescala, which takes the name of Rio de Zacatula farther to the west, is almost as dangerous as the Papagallo. I passed it on a raft formed according to the old Mexican custom of the dried fruits of the gourd, on which reeds are fastened together; the raft is directed by two Indians,

* 196 feet. *Trans.*

† From 820 to 984 feet. *Trans.*

‡ £20,000 Sterling.

who support it with the one hand, and swim with the other.

The construction and embellishment of a new road from Mexico to the port of Vera Cruz, have latterly become the object of the solicitude of government. A fortunate rivalship is displayed between the new council of commerce established at Vera Cruz, under the name of *real tribunal del consulado*, and the old *consulado* of the capital; and the latter is gradually beginning to shake off the inactivity with which it has so long been accused. The merchants of Mexico, having constructed at their expence an excellent causeway along the heights of Tiangillo and *las Cruzes*, which separate the basin of Toluca from that of Mexico, wish the new road of Vera Cruz to pass through Orizaba; while the merchants of Vera Cruz who have country houses at Xalapa, and who maintain numerous commercial relations with that town, insist that the new carriage road (*camino carretero*) should go by Perote and Xalapa. After a discussion of several years*, the *consulado* of Vera Cruz profited by the arrival of the viceroy, Don Josef de Yvirigarras, who declared himself in favour of the road by Xalapa as of the greatest utility, and who gave the direction

* See Vol. II. p. 270.

of it to M. Garcia Conde an active and intelligent engineer.

The old road from Mexico to Xalapa and Vera Cruz, passed along the elevated plains of Apa, without touching the great town of Puebla de los Angeles; and this is the road described by the Abbe Chappe in his journey to California, in which that philosopher determined several points by barometrical measurements *. The indigenous merchandizes and productions were then conveyed from Mexico to Perote and Xalapa, by the dike which separates the lakes of Tezcuco and San Christobal; by Totolcingo and Teotihuacan; and by the old field of battle of Otumba, the Inn of Irolo, Apa, Piedras Negras, S. Diego, Hongito, Vireyes and Tepeyacualco. They reckoned by this road, 43 leagues from Mexico to Perote, and 74 from Mexico to Vera Cruz. At that period, and even till 1795, two days were taken to go from the capital to Puebla, making a large circuit towards the north west by Otumba and Irolo, and inclining from thence to the south east by Pozuelos, Tumbacaretas, and San Martin. At last, under the viceroyship of the Marquis de Branciforte, a new and very short road was opened by the Venta de Chalco, the small chain of porphyritic mountains of Cordova, Tesmelucos, and Ocot-

* Voyage de Chappe, publié par M. de Cassini, p. 107.

lan. The advantages of these more direct communications between the capital, the city of Puebla, and the fortress of Perote will be easily discovered by examining my atlas of New Spain.

The new road from Mexico to Puebla possesses still the inconsiderable difficulty of the passage of the mountains, which separate the basin of Tenochtitlan from that of Cholula. The table land which extends from the foot of the volcanoes of Mexico to the mountains of Orizaba and the Coffre, is a level plain, and covered with sand, fragments of pearled rock, and saline efflorescences. The road from Puebla to Vera Cruz, passes through Cocosingo, Acaxete and Perote. We imagine we are travelling over a surface levelled from being long covered with water. When these plains are heated by the solar rays, they exhibit, at the height of the passage of Saint Bernard, the same phenomena of suspension and extraordinary refraction, which we generally observe only in the neighbourhood of the ocean.

The magnificent road constructing by order of the *consulado* of Vera Cruz, from Perote to that city, will rival those of the Simplon and Mount Cenis. It is broad, solid, and of a very gentle fall. They have not followed the tract of the old road, which was narrow and paved with basaltic porphyry, and which ap-

pears to have been constructed towards the middle of the eighteenth century. The rapid ascents have been carefully avoided; and the charge which is brought against the engineer, of lengthening too much the road, will be dropt when wheel carriages shall be substituted to the carriage of goods on the backs of mules. The construction of this road will probably cost more than 15 millions of francs*; but we hope that so beautiful and useful a work will not suffer any interruption. It is an object of the highest importance, for those parts of Mexico the most remote from the capital, and the port of Vera Cruz; for when the road shall be completed, the price of iron, mercury, spirituous liquors, paper, and all the other commodities of Europe, will experience a sensible fall in price; the Mexican flour which has hitherto been dearer at the Havannah than the flour of Philadelphia, will be naturally preferred to the latter; the exportation of the sugars and hides of the country will be more considerable; and the transportation of goods on waggons will require a much smaller number of mules and horses than are now employed. These changes will produce a double effect on subsistence; and the scarcities which have almost periodically hitherto desolated Mexico will be more rare, not

* £600,000 Sterling. *Trans.*

only because the consumption of maize will be less, but because the agriculturist, stimulated by the hope of selling his flour at Vera Cruz, will lay out more of his ground in the cultivation of wheat.

During my stay at Xalapa in the month of February, 1804, the new road constructed under the direction of Don Garcia Conde, had been commenced on those points which presented the greatest difficulties, namely, the ravin called the *Plan del Rio*, and the *Cuesta del Soldado*. They intend to place columns of porphyry along the road, for the purpose of indicating both the distances, and the elevation of the surface above the level of the ocean. These inscriptions, which are no where to be met with in Europe, will be particularly interesting to a traveller, who is climbing the eastern ascent of the Cordillera: they will quiet his mind by announcing to him that he is approaching that fortunate and elevated region, in which the scourges of *black vomiting*, and yellow fever are no longer to be dreaded.

The old road of Xalapa leads from Rinconada eastwards, by the old Vera Cruz vulgarly called *la Antigua*. After passing below this village, the river of the same name, nearly 200 metres* in breadth, we follow the coast by

* 656 feet. *Trans.*

Punta Gorda and Vergara, or if the tide is high, we take the road of la Manga de Clavo, which does not rejoin the coast till the very port of Vera Cruz. It would be advantageous to construct a bridge over the Rio de la Antigua, near la Ventilla, where the bed of the river is only 107 meters* in breadth, by which means the Xalapa road would be shortened more than six leagues, and without touching old Vera Cruz, it would lead immediately from the Plan del Rio, by the bridge of la Ventilla, Passo de Ovejas, Cienega de Olocuatla, and Loma de San Juan to Vera Cruz. This change is so much the more desirable, as it is the journey from Encero to the coast, which is the most dangerous to the health of the inhabitants of the interior of Mexico, when they descend from the table land of Perote, and the heights of Xalapa. The suffocating heat which prevails in that arid and naked plain, has a powerful effect on individuals whose nervous system has never been accustomed to such a violent irritation. The heat, added to the fatigues of the journey, disposes the organs more easily to receive the deleterious miasmata of the yellow fever; and the ravages of that pestilential malady, would be greatly diminished therefore by shortening that part of the road which crosses the arid plains of the sea coast.

* 350 feet. *Trans.*

The road from Mexico to Vera Cruz, by Orizaba is the least frequented: it passes by Nopoluca, San Andres, Orizaba, Cordoba, and Cotastla. The group of porphyritic mountains which contain the summits of the Pic d'Orizaba and the Coffre de Perote, prevent the engineer from tracing in a straight line, the road from the capital to the port of Vera Cruz. On the Xalapa road, we turn the great mountain of the Coffre on the north; and on the Orizaba and Cordova road, we turn the Pic d'Orizaba on its southern slope. One of these roads deviates to the north, and the other to the south; but the greatest deviation is that by Orizaba. This last road would be considerably abridged, if, instead of going to Vera Cruz by Cotastla and the Venta de Xamapa, they were to pass through the hilly country, known by the name of the *Sierra de Atoyaque*. According to an estimate of the *Regidores* of the Villa de Cordova, the construction of this new road would cost 1,416,800 piastres*.

The principal objects of the interior commerce of New Spain are, 1st. The productions and goods imported or exported at the two ports of Vera Cruz and Acapulco, of which we shall afterwards speak; 2d. the exchange which is carried on between the different provinces,

* £297,528 Sterling.

and particularly between Mexico, properly so called, and the *Provincias Internas*. 3d. Several productions of Peru, Quito, and Guatimala, which are conveyed through the country to be exported at Vera Cruz for Europe. Were it not for the great consumption of commodities in the mines, the interior commerce could not have any great activity between provinces which enjoy in a great measure the same climate, and which consequently possess the same productions. The elevation of the soil gives the southern regions of Mexico, that middle temperature which is necessary for the cultivation of European plants. We have already stated, that the same latitude produces the banana, the apple, the sugar cane, and wheat, the manioc, and the potatoe. The nutritive gramina which vegetate among the ices of Norway and Siberia, cover the Mexican fields of the torrid zone. Hence, the provinces situated under the 17° and 20° of latitude, very seldom require the flour of New Biscay. Fortunately, the cultivation of maize animates the interior commerce, much more than the cerealia of Europe. As it seldom happens that the maize harvest is equally good over a large extent of ground, one part of Mexico is in want, while another abounds with it, and the price of the *fanega* differs in two neighbouring intendancies

frequently from 9 to 22 livres tournois*. The commerce of maize is in fact of great importance to the provinces of Guadalaxara, Valladolid, Guanaxuato, Mexico, San Luis Potosi, Vera Cruz, Puebla, and Oaxaca.

Thousands of mules arriving every week from Chihuahua and Durango to Mexico, carry besides bars of silver, hides, tallow, some wine of Passo del Norte, and flour; and they take in return woollen cloth of the manufacture of Puebla and Queretaro, goods from Europe, and the Philippine Islands, iron, steel, and mercury. We have observed in speaking of the communication between tha coasts of the South Sea and Atlantic Ocean, that the introduction of camels would be exceedingly useful in Mexico. The table lands over which the great roads pass are not sufficiently elevated for the cold to be prejudicial to these animals; and they would suffer less than horses and mules from the aridity of the soil, and the want of water and pasturage to which the beasts of burden are exposed to the north of Guanaxuato, especially in the desert by which New Biscay is separated from New Mexico. Camels, which were still used in Spain even long after the destruction of the empire of the Moors, were introduced into Peru† towards the end

* See vol. ii. p. 445.

† *Garcilasso*, T. ii. p. 326.

of the 16th century by Juan de Reinaga a Biscayan; but it appears that they did not propagate there. Besides the government in those barbarous times was not favourable to the introduction of these useful animals, but yielded to the instances of the conquerors, (*encomendores*) who pretended that the multiplication of beasts of burden prevented them from hiring out the natives to travellers and merchants, for the purpose of carrying provisions and commodities in the interior of the country.

In time of war, when the navigation round Cape Horn is attended with danger, a great part of the 80 thousand loads* (*cargas*) of cocoa annually exported from the port of Guayaquil, passes through the Isthmus of Panama and Mexico. The expence of carriage from Acapulco to Vera Cruz generally amounts to two piastres† per *carga*, and the preference is given to this road whenever the cocoa of Guayaquil costs at the Havannah more than 20 piastres‡ per fanega. The price of the purchase on the coast of Quito is generally from four to five piastres§; the price at

* One of these *cargas* contains 81 lib.; and a *fanega* weighs 110 lb. Castille weight.

† 8s. 5d. *Trans.*

‡ £5 4s. *Trans.*

§ From 16s. 10d. to £1 1s. *Trans.*

which it sells at Cadiz varies from 25 to 35 piastres*; and notwithstanding the extreme length of the navigation round Cape Horn, the freight from Guayaquil to Spain does not exceed from seven to eight piastres†, the fanega.

The copper of Guasco known by the name of copper of Coquimbo frequently takes the same route as the cocoa of Guayaquil. This copper only costs at Chili six or seven piastres‡ per quintal; and the ordinary price at Cadiz is 20 piastres§; but as in time of war it rises to 35 or 40, the merchants of Lima who carry on the trade in the productions of Chili, find it for their interest to send copper into Spain by Guayaquil, Acapulco, Vera Cruz, and the Havannah. These modes of communication which are very unnatural, will soon cease, whenever an active government willing to protect commerce, shall construct a good road from Panama to Portobello, and whenever the Isthmus shall be able to supply the necessary number of beasts of burden for the carriage of the productions of Quito, Peru, and Chili.

The same reasons which induce the inhatants of Guayaquil to send their cocoa in time

* From £5 5s. to £7 7s. *Trans.*

† From £1 9s 5d to £1 13s 7d. *Trans.*

‡ £1 5s. 2d. or £1 9s. 5d. *Trans.*

§ £4 4s. *Trans.*

of war, through the kingdom of Mexico, prevail also on the merchants of Guatimala to send the indigoes of their country, which surpass in richness of colour all other known indigoes, by the way of Tehuantepec and the Rio Huasacualco to Vera Cruz. This is the place to speak more amply than we have already done* of the project of a canal for the union of the two seas in the intendancy of Oaxaca, a plan which is every way worthy of fixing the attention of the government.

Cortez, during his stay at Tenochtitlan had already perceived the great importance of the river of Huasacualco†, as is proved by his third letter to the Emperor Charles V., dated from *la Villa Segura de la Frontera*, the 30th of October, 1520. Warmly interested in discovering a safer port than that of Vera Cruz, or the passage from one ocean to another, which he calls the *secret of a strait*, the Spanish General demanded from Montezuma "information relative to the state and configuration of "the eastern coast of the empire of Anahuac. "The monarch answered that he did not "know that coast himself, but that he would "order all the shore with its bays and rivers

* Vol. i. p. 23, vol. ii. p. 242.

† They write in Mexico indistinctly, Huasacualco, Guasacualco and Goazocoalcos. Cortez, who corrupts all the Mexican names calls it, Quacalco.

" to be painted, and that he would supply the " necessary guides to accompany the Spaniards " destined to examine these countries. On " the morrow they brought to Cortez a plan " of the whole coast represented on cloth. " The pilots recognized in this map the mouth " of a great river which they supposed to " be the same with the opening which they " perceived in the coast, on their arrival at " Vera Cruz near the mountains of Sanmyn* " in the province of Mazamalco." Guided by this information, Cortez dispatched in 1520 a small detachment of ten men, under the orders of Diego Ordaz, to reconnoitre this river. The pilots found the depth at the mouth only two fathoms and a half; but on ascending 12 leagues against the current, they discovered that the river was every where from five to six

* Perhaps these mountains are the chains of San Martin and the Volcan de Tustla. See vol. ii. p. 257, and *Cartas de Hernan Cortez*, p. 92 and 351. I have already stated that there exists at Mexico in the collection of hieroglyphic manuscripts preserved in the palace of the Viceroys, maps of the valley and lakes of Tenochtitlan, painted on cotton cloth by the Aztecs. I was also assured that the inhabitants of the village of Tetlama near Cuerna-vaca, as well as those of Tlascala possess topographical plans executed before the conquest. Gomara quotes an itinerary map from Xicalanco to Nicaragua which was drawn up by the inhabitants of Tabasco, and presented to Cortez. *Conquista de Mexico*, fol. 100.

fathoms in depth. The banks of the Huasacualco were then much better peopled than at present.

After the taking of Mexico, Gonzalo de Sandoval conquered the province of Tehuantepec in 1521; and though Andre Niño the pilot, affirmed that there was no strait from the coast of Nicaragua to the Isthmus of Tehuantepec, this Isthmus was nevertheless looked upon as of very great importance, because the proximity of the two seas, and the River Huasacualco afforded the first Spanish conquerors a facility in transporting from Vera Cruz to the coast of the Pacific Ocean, the necessary materials for the construction of vessels. The expedition of Hernando de Grixalva, who set sail for California in 1534, went from Tehuantepec; and in the same manner the vessels in which Cortez embarked at Chametla* were constructed at the mouth of the Rio Chimalapa, of the materials brought by the Rio Huasacualco. One of these vessels was lost in crossing the Bar of St. Francis, on leaving the *Laguna de Santa Teresa.*

Since the end of the 16th century, the port of Tehuantepec, which hardly deserves the name of road, has been very little frequented; the South Sea commerce has been concentrated

* See vol. ii. p. 322.

at Acapulco; and the embarcations necessary for communication with the Philippine Islands, have all taken place at Manilla, or the port of San Blas. Besides, the sea is daily withdrawing from the coast of Tehuantepec; the anchorage is yearly becoming worse; and the sand brought down by the river Chimalapa augments both the height and extent of the bar. At present the distance from the Villa de Tehuantepec to the sea, is four leagues by the way of the Hacienda de la Zoleta; and the best anchorage is at the Morro del Carbon, at the salt pits, and in the Laguna de Santa Teresa.

A fortunate accident towards the end of the last century was the means of occasioning the two Viceroys, Buccareli and Revillagegedo, again to turn the attention of government to the Isthmus of Tehuantepec and the Rio de Huasacualco. There was discovered in 1771 at Vera Cruz, amongst the artillery of the castle of St. John de Ulua, several pieces of cannon cast at Manilla. As it was known that before the year 1767, the Spaniards neither doubled the Cape of Good Hope nor Cape Horn, in their voyage to the Philippine Islands, and that since the first expeditions of Magellan and Loysa who set out from Spain, all the commerce of Asia was carried on in the Galleon of Acapulco, they could not conceive how these

guns had crossed the continent of Mexico on their way from Manilla to the Castle of Ulua. The extreme difficulty of the road from Acapulco to Mexico, and from thence to Xalapa and Vera Cruz, rendered it very improbable that they should come by that way. In the course of their investigations, they learned both from the chronicle of Tehuantepec* written by Father Burgoa, and from the traditions preserved among the inhabitants of the Isthmus of Huasacualco, that these guns were cast at the Island of Luzon, and landed at the Bar of San Francisco; that they had ascended the bay of Santa Teresa, and the Rio Chimalapa; that they had been carried by the Farm of Chivela, and the forest of Tarifa to the Rio del Malpasso; and that after having been again embarked, they descended the Rio Huasacualco, to its mouth in the gulph of Mexico.

It was then very reasonably observed that this road which had been frequented in the beginning of the conquest, might still become very useful for the opening a direct communication between the two seas. The viceroy Don Antonio Bucareli gave orders to two able engineers, Don Augustin Cramer and Don Miguel del Corral, to examine, with

* *Burgoa, Palestra Historial o Cronica de la Villa de Tehuantepec.* Mexico 1674.

the greatest minuteness, the country between the Bar of Huasacualco and the road of Tehuantepec; and he instructed them at the same time to verify whether as was vaguely supposed, among the small rivers of Ostuta, Chicapa, or Chimalapa, there was none which in any of its branches communicated with the two seas. From the itinerary journals of these two engineers, of whom the former was lieutenant of the castle of Ulua, I drew up my map of the Isthmus of Tehuantepec. They found that no river discharged at the same time its waters into the South Sea and Atlantic Ocean; that the Rio Huasacualco did not take its rise as the viceroy had been informed near the town of Tehuantepec; and that on ascending it beyond the cataract, even as far as the old *desembarcadero* de Malpasso, they were still more than 26 leagues distant from the shores of the South Sea. They observed that a chain of mountains of very inconsiderable height, divides the waters between the gulf of Mexico, and the gulf of Tehuantepec. This small cordillera stretches from east to west, from the Cerros de los Mixes, formerly inhabited by a wild and warlike tribe* towards the elevated table land of Portillo de Petapa. The engineer, Cramer, affirms however, that to the south of the village of Santa Maria de Chimalapa, the mountains form

Cartas de Cortez, p. 372.

rather a group than an uninterrupted chain and "that there exists a transversal valley, in "which a canal of communication might be "cut between the two seas." This canal which would unite the Rio de Chimalapa with the Rio del Passo (or Malpasso) would only be six leagues in length; the boats would ascend the Rio Chimalapa, which affords a very easy navigation from Tehuantepec to the village of San Miguel; and from thence they would pass by the canal projected in the time of Count Revillagigedo to the Rio del Passo. This river discharges itself into the Rio de Huasacualco near the *Bodegas de la Fabrica*; but its navigation is extremely difficult on account of the seven pyramids (*raudales*) which are counted between its source and the mouth of the Rio de Saravia.

It would be of infinite importance again to order this ground to be examined by intelligent engineers, to determine whether, as was believed by M. Cramer, the *canal between the two seas*, can be executed without locks or without *inclined planes*, and whether by blowing up the rocks with powder, the beds of the rivers Passo and Chimalapa can be deepened. The Isthmus is rich in cattle, and would, from its great fertility, supply valuable productions for the commerce of Vera Cruz. The fine plains of Tehuantepec would be susceptible of

irrigation from the Rio de Chimalapa: in their present state they produce a little indigo and cochineal of a superior quality.

Before setting on foot in the islands of Cuba and Pinos, the felling of cedar and acajou wood (cedrela odorata and swietenia mahogany) the dock-yards of the Havannah drew their wood for ship building from the thick forest which covers the northern slope of the Cerros de Petapa and Tarifa. The Isthmus of Tehuantepec was at that time very much frequented, and the ruins of several houses which are still to be seen on the two banks of the river Huasacualco are to be dated back to that period. The cedar and acajou wood was embarked at the Bodegas de Malpasso.

To avoid the seven *rapids* of the Rio del Passo, a new port (*desembarcadero*) was established in 1798, at the mouth of the Rio Saravia: the salt provisions (*tasajo*) of Tehuantepec, the indigo of Guatimala, and the cochineal of Oaxaca, were conveyed by this way to Vera Cruz and the Havannah. A road has been opened from Tehuantepec by Chihuitan, Llano Grande, Santa Maria Petapa and Guchicovi to the new port of la Cruz. They reckon this road 34 leagues. The productions destined for the Havannah, do not descend to the mouth of the Rio Huasacualco, or to the small fort of that name, because they

are afraid of exposing their canoes to the north winds, during the long passage from the bar of Huasacualco to the port of Vera Cruz. They disembark the goods at the Passo de la Fabrica; and from thence they are conveyed on the backs of mules, by the village of Acayucan to the banks of the river San Juan, where they are again embarked in large canoes and transported by the bar of Tlacatalpan to the port of Vera Cruz.

For some years the roads from Tarifa and Petapan, have been encumbered by trunks of cedar trees, needlessly cut down by order of some commissaries of the royal marine. These trunks, the finest in the forest, are rotting, and no person thinks of transporting them to the Havannah. The inhabitants of the Spanish colonies are accustomed to measures like these without any result; and they attribute them to the facility with which all projects are undertaken and abandoned by the ministry. A short time before my residence on the banks of the Orinoco, *commissados del rey* ascended the river to the mouth of the Rio Carony, for the purpose of cutting down all the trees which might be useful in ship-building. They measured their diameter and height, and marked so great a number of trunks of Cedrela, Laurus, and Caesalpinia, that all the dock-yards of Europe could not have not made use of

them in ten years; but no tree was ever cut down; and this long and laborious labour produced no other effect than an increase of expence to government.

If it should be proved by new investigation, that the cutting of a canal in the isthmus of Tehuantepec would not be advantageous, the government should at least encourage the inhabitants of that province to improve the road by the Portillo de Petapa, to the new port of la Cruz. Part of the productions of the kingdom of Guatimala, those of the intendancy of Oaxaca and Tehuantepec might come at all times by this way to Vera Cruz. In 1804 at my departure from New Spain the carriage of goods on the backs of mules from Tehuantepec to Vera Cruz, by Oaxaca, amounted to 30 piastres per load*; and the muleteers took three months in going a road which is not 75 leagues in a straight line. In conveying the productions by the way of the Isthmus and the river of Huasacualco, the load would only coast 16 piastres† of carriage; and as they take only ten days from the Passo de la Fabrica to Vera Cruz, nearly 70 days are gained on the whole passage. The consulado of Vera Cruz which has displayed the most praiseworthy zeal for the opening of this new road for internal commerce, abolished in 1803, the duty of 5 per cent. to which all goods

* £6 6s. ster. *Trans.*

† £3 7s 10d. *Trans.*

embarked on the Rio Huasacualco were subject. This duty was known by the absurd denomination of *hot-country duty* (*derecho de tierra caliente*). I have thought it important to publish in the greatest detail every thing relative to the projected communications between the two seas. The topography of the Isthmus of Tehuantepec is altogether unknown in Europe; and from authorities which I have quoted, we cannot doubt that this point of the globe deserves no less the attention of government than the Rio Chamaluzon, the Lake of Nicaragua, the Isthmus of Panama, the Bay of Cupica, and the ravin de la Raspadura at Choco.

The *foreign commerce* of New Spain, from the position of the coasts, is naturally composed of the commerce of the South Sea, and that of the Atlantic Ocean. The ports on the eastern coast are Campeche, Huasacualco, Vera Cruz, Tampico, and Nuevo Santander; if we may give the name of ports to roads surrounded with shallows, or mouths of rivers shut by bars, and presenting a very slight shelter from the fury of the north winds. We have already in the third chapter* detailed the physical causes which give a particular character to the Mexican coast opposite to Europe. We have also spoken of the fruitless endeavours which have been made since 1524, to discover a safer port than

* Vol. i. p. 80.

Vera Cruz. The vast shore which stretches from Nuevo Santander to the north and north west, is still very little known, and we may repeat in our days, what Cortez wrote to the emperor Charles the 5th, three years after the taking of Tenochtitlan, "that there remains to be discovered the secret of the coast which extends from the Rio de Panuco to Florida*."

For centuries, almost all the maritime commerce of New Spain has been concentrated at Vera Cruz. When we bestow a glance on the chart of that port, we see that the pilots of Cortez's squadron were right in comparing the port of Vera Cruz to a pierced bag. The Island of Sacrifices, near which the vessels remain in quarantine, and the sandbanks of *Arecife del Medio, Isla Verde, Anegada de dentro, Blanquilla, Galleguilla* and *Gallega*, form with the continent between the *Punta Gorda*, and the small cape *Mocombo*, a sort of creek, which is open to the north west; and when the north winds (*los nortes*) blow with all their force, the vessels at anchor before the castle of San Juan d'Ulua, lose their anchors and are driven to the east. After getting out of the channel which separates the Island of Sacrifices from the Isla Verde, they are in 24 hours driven by the winds as far as the port of Campeche. Eighteen years

* *Cartas de Cortez*, p. 340 and 382.

ago, *la Castilla*, a ship of the line, moored by nine cables to the bastion of the castle of Ulua, tore off in a tempest, the bronze rings which were fixed to the wall of the bastion; and it struck on the coast, in the very port, near the sand bank of *los Hornos*, to the west of the Punta Mocambo. It was by an extraordinary fatality, in this vessel, that the great quadrant was lost, which was used in the observations of the unfortunate Chappe, and which was re-demanded by the Academy of Sciences of Paris, to verify its divisions. The good anchorage in the port of Vera Cruz is between the castle of Ulua, the town, and the sand banks of La Lavandera. Near the castle we find six fathoms water; but the channel by which the port is entered, is hardly four fathoms in depth, and 380 metres * in breadth.

The principal objects of *exportation at Vera Cruz* are according to the declarations at the customs, taking an average of several years of peace:

Gold and silver in ingots, or converted into coin or wrought plate, to the value of *seventeen millions of piastres* †.

Cochineal (*grana*, *granilla*, and *polvos de grana*) nearly four thousand *zurrones*, or four hundred thousand kilogrammes, to the value

* 1259 feet. *Trans.*

† £3,570,000 Sterling. *Trans.*

of *two millions four hundred thousand piastres**.

Sugar, five millions and a half of kilogrammes, *one million, three hundred thousand piastres* †.

Flour, to the value of *three hundred thousand piastres* ‡.

Mexican indigo, eighty thousand kilogrammes, value *two hundred and eighty thousand piastres* §.

Salted provisions, dry legumes, and other eatables, *one hundred thousand piastres* ‖.

Tanned hides, *eighty thousand piastres* ¶.

Sarsaparilla, *ninety thousand piastres* **.

Vanilla, *sixty thousand piastres* ††.

Jalap, one hundred and twenty thousand kilogrammes, *sixty thousand piastres* ‡‡.

Soap, *fifty thousand piastres* §§.

Campeachy wood, *forty thousand piastres* ‖‖.

* £504,000 Sterling. *Trans.*
† £273,000 Sterling. *Trans.*
‡ £63,000 Sterling. *Trans.*
§ £43,680 Sterling. *Trans.*
‖ £21,000 Sterling. *Trans.*
¶ £16,800 Sterling. *Trans.*
** £18,900 Sterling. *Trans.*
†† £12,600 Sterling. *Trans.*
‡‡ Ditto. *Trans.*
§§ £10,500 Sterling. *Trans.*
‖‖ £8,400 Sterling. *Trans.*

Pimento of Tabasco, *thirty thousand piastres* *.

The indigo of Guatimala, and the cocoa of Guayaquil, are in time of war very important objects for the commerce of Vera Cruz. We do not name them however, in this table, because we wished to confine it to the indigenous productions of New Spain.

The *importation of Vera Cruz* includes the following articles: linen and cotton, and woollen cloth, and silks, (*ropas*) to the value of *nine millions, two hundred thousand piastres* †.

Paper, three hundred thousand reams, a *million of piastres* ‡.

Brandy, thirty thousand hogsheads, (*barriques*), a *million of piastres.*

Cocoa, eighty thousand fanegas, a *million of piastres.*

Mercury, eight hundred thousand kilogrammes, *six hundred and fifty thousand piastres* §.

Iron, two millions and a half of kilogrammes, *six hundred thousand piastres* ‖.

Steel, six hundred thousand kilogrammes, *two hundred thousand piastres* ¶.

* £6,900 Sterling. *Trans.*

† £2,310,000. Sterling. *Trans.*

‡ £210,000 Sterling. *Trans.*

§ £136,500 Sterling. *Trans.*

‖ £126,000 Sterling. *Trans.*

¶ £42,000 Sterling. *Trans.*

Wine, forty thousand hogsheads, (*barriques*), *seven hundred thousand piastres* *.

Wax, two hundred and fifty thousand kilogrammes, *three hundred thousand piastres* †.

We shall take the average value to be in piastres:

	millions.
Exportation from Vera Cruz . .	22 ‡
Importation to Vera Cruz . . .	15 §
Commercial circulation	37 ‖

We shall give in this place, the *states* of the commerce of Vera Cruz, published by the *consulado*, at the close of the years 1802 and 1803.

* £147,000. *Trans.*
† £63,000. *Trans.*
‡ £4,620,000. *Trans.*
§ £3,150,000. *Trans.*
‖ £7,770,000. *Trans.*

TABLE I. (A)

Balance of Commerce of Vera Cruz, in 1802.

Importation from Spain into Mexico, of produce of national agriculture and industry.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Brandy	29,695 hogs.	1,283,914
White wine	40,335 ditto	683,079
Red wine	21,657 ditto	331,882
The same in bottles	13,159 bott.	8,642
Vinegar	3,374 hogs.	48,149
Dried grapes	2,501 quint.	27,417
Almonds	2,590 ditto	81,545
Olives	9,519 jars	22,205
Oil	32,099 arrob.	96,297
Saffron	5,187 lib.	99,765
Aromatic plants	185 quint.	2,009
Capers	202 barr.	2,714
Nuts	227 quint.	3,240
Figs	320 ditto	2,491
Origan	2,450 lib.	306
Cumine	242 arrob.	1,992
Fresh grapes	1,170 pitch.	3,510
Pilchards (sardines)	93 barr.	1,347
Anchovies	10 arrob.	50
White paper	274,211 reams	885,884
Foul paper	7,906 ditto	4,577
Thread	376 quint.	11,451
Corks	699,000	5,177
Canteens (*frasqueras*)	492	20,583
Hams	142 arrob.	1,380
Fine liquors	852 ditto	11,766
Soap	119 quint.	1,785
	Carried over	3,643,157

Denominations of goods and commodities.	Quantities.	Value in double piastres.
Brought forward .	. .	3,643,157
Delf ware . .	3,041 doz.	4,651
Beer . .	71,876 bott.	45,779
Cider . .	1,920 ditto	968
Sausages . .	3,368 lib.	1,684
Vermicelli . .	233 quint.	4,623
Sharping stones .	513	1,282
White iron . .	289 chests	10,115
Iron in bars . .	42,440 quint.	382,480
Wrought iron . .	7,792 ditto	78,882
Steel . .	7,020 quint.	132,392
Cordage . .	459 ditto	6,442
Woollen cotton cloth, linen, silks, and gauzes, in *Tercios*	5,651	2,210,552
caxones	3,293	3,889,891
baules	899	606,130
caxones	. .	520,182
toscos	3,413	
Total value in piastres		11,539,219

(B.)

Importation from Spain into Mexico, of the produce of foreign agriculture and industry.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Butter	15,884 lib.	4,678
Cheese	259 quint.	10,334
Wine	16,920 bott.	12,690
White paper	87,665 reams	328,714
Steel	7,050 quint.	126,605
Delf ware	9,234 doz.	23,085
White iron	996 chests	32,400
Canteens	12 ditto	390
Coarse linens	50 pieces	2,000
Wax candles	337 lib.	270
Cod	340 quint.	8,500
Cloves	14,737 lib.	47,204
Pepper	37,465 ditto	22,657
Cinnamon	199,965	661,569
Woollen and cotton cloth, linen, and silk, in *tercios*	18,529	6,572,108
Woollen and cotton cloth, linen, and silk, in *caxones*	501	394,435
Woollen and cotton cloth, linen, and silk, in *baules*	24	8,533
Woollen and cotton cloth, linen, and silk, in *caxones tostos*	5,200	595,458
Total value in piastres		8,851,640

(C.)

Importation from America, (the Spanish Colonies) into Mexico.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Wax	20,571 arrob.	332,359
Coffee	344 quint.	6,060
Cocoa of Caracas	1,984 faneg.	106,234
Ditto of Maracaybo	18,709 ditto	687,928
Ditto of Tabasco	6,952 ditto	315,902
Starch	1,746 arrob.	2,550
Campeachy wood	28,019 quint.	38,958
Indigo	4,910 lib.	4,910
Salt fish	6,586 arrob.	15,185
Tortoise shell	570 lib.	2,954
Salt	18,699 faneg.	33,316
Sacks (*costales*)	130,800 ditto	42,388
Straw hats	5,084 doz.	7,948
Packthread(*heniquen*)	1,964 arrob.	6,065
Cordage	259 pieces	2,842
Harpoons(*tiburoneras*)	1,057 arrob.	2,379
Blankets	716	2,229
Hammocks	325	846
Quinquina	1,030 lib.	5,150
Shoes	62½ doz.	302
Divers articles		1,224
	Total value in piastres	1,607,729

(D.)

Exportation from Mexico for Spain.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Cochineal *grana fina*	43,277 arrob.	3,303,470
Cochineal *granilla*	2,355 ditto	50,472
Cochineal *polvos de grana*	1,322 ditto	14,615
Indigo	1,480,570 lib.	3,229,796
Vanilla	1,793 mill.	65,076
Sugar	431,667 arrob.	1,454,240
Roucou	195 ditto	1,419
Cotton	8,228 ditto	28,644
Tabasco pepper	2,920 quint.	15,622
Campeachy wood	17,389 ditto	23,116
Cocoa of Soconuzco	1,724 lib.	1,078
Coffee	272 quint.	4,360
Sarsaparilla	461 ditto	2,988
Jalap	2,921 ditto	68,760
Balms	48 arrob.	1,200
Quinquina	700 lib.	612
Furs		14,626
Tortoise shell	439 lib.	2,290
Different articles		3,516
Plates of copper	670 quint.	15,745
Coined and wrought gold		62,663
Wrought silver		52,622
Coined silver		25,449,289
Total value in piastres		33,886,219

(E.)

Exportation from Mexico for other parts of Spanish America.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Flour . .	22,858 ter.	404,051
Sugar . .	7,265 arrob.	22,195
Cocoa of Guayaquil	631 fan.	15,821
Wax . .	368 arrob.	6,426
Campeachy wood	6,219 quint.	7,773
Raw hides . .	2,300	2,403
Tallow . .	1,675 arrob.	6,711
Eatables . .	. . .	100,461
Woollen cloth . .	. . .	9,062
Pitch and tar . .	403 barr.	1,012
Sacks . .	7,690	2,419
Ordinary delf . .	239 chests	2,019
Gold leaf . .	. . .	7,041
Soap . .	1,946 ditto	55,832
Pité . . .	1,235 arrob.	9,504
Tanned hides . .	. . .	82,353
Different articles .	. . .	66,912
Plates of copper .	895 quint.	20,542
Wrought copper .	13,947 lib.	5,844
Lead . .	330 quint.	2,779
Wrought silver .		15,417
Coined silver . .		3,730,171
Coined gold . .		4,400
Total value in piastres		4,581,148

RESULTS.

	piastres	piastres.
Importation from Spain, In national produce	11,539,219	
Importation from Spain, In foreign produce	8,851,640	20,390,859
Exportation for Spain		33,866,219
Balance in favour of the exportation		13,475,360
Commerce between the mother country and Vera Cruz		54,275,078

	piastres
Importation from America	1,607,729
Exportation for America	4,581,148
Balance in favour of the exportation	2,973,419
Commerce between America and Vera Cruz	6,188,877

	piastres
Total importation	21,998,588
Total exportation	38,447,367
Total amount of the commerce of Vera Cruz	60,445,955

The commerce of Vera Cruz employed in 1802, 558 vessels, of which

Came	From Spain	148	Bound	For Spain	112
	From America	143		For America	153
Arrived at the port of Vera Cruz		291	Left Vera Cruz		267

OBSERVATIONS.

"1. *The consulado of Vera Cruz* publishes "these states of its commerce annually, for the "information of merchants respecting the "consumption of New Spain, and to guide "them in their speculations; and they regret "that it is not in their power to give a more "detailed account of the value of the woollen "and cotton cloth, linen, and silks contained in "the chests *(caxones* and *baules)* which are not "opened at the custom-house. It may in "general be observed, that the *caxones arpilla-* "*dos* contain silks; the *caxones toscos* hard "ware, drugs, crystals, glasses, delf ware, hats, "shoes or boots; the *tercios arpillados*, woollens "and cottons, linen and baize; and lastly, the "*baules*, silk and cotton stockings, blond and "bone-lace, handkerchiefs, robes, and other "articles of luxury.

"2. In this balance has not been included "the merchandizes and productions imported "on account of the government *(para la real* "*hacienda)*, and which would have increased "the sum total of the importations *twenty*

" *one millions and a half of piastres;* for the " government receive 150,000 reams of paper " for the manufacture of cegars, 34,000 quin- " tals of mercury, and other articles amounting " in value, to two millions of piastres. The ex- " portation in coined gold and silver on account " of government, amounted to nineteen mil- " lions and a half of piastres, of which twelve " and a half were sent to Spain, and seven " and a half to the other Spanish colonies " of America.

" 3. The produce of the home manufactures, " have been in great request, and all the de- " mands could by no means be satisfied, which " ought to excite the manufacturers to increase " the activity of their workshops.

" 4. The importation of European brandy " would have been much greater, if it had not " been for the increasing consumption of rum " manufactured in Mexico. The wines of " Xeres and Rioxa are in the greatest re- " quest.

" 5. We have still to complain of the losses " occasioned by the insufficient package of the " goods sent to South America: the example " of Cadiz is far from being imitated by the " other ports of the Peninsula.

" 6. The greatest part of the indigo exported " from Vera Cruz, comes from the kingdom

" of Guatimala. This valuable production " comes in time of war by the way of " Oaxaca; and we must hope, that it will con- " tinue to be exported from Vera Cruz " in time of peace, if government give free- " dom to the commerce of the Rio Hua- " sacualco.

" 7. Notwithstanding the great number of " vessels which arrived this year at Vera " Cruz, in two hundred and sixty voyages from " Europe to America, and from America to " Europe, *there was not a single shipwreck,* nor " any other fatal event at sea. The cruel dis- " ease called *black vomiting,* which raged from " April to October, carried off fifteen hundred " individuals partly Europeans, and partly in- " habitants of the cold regions of Mexico. " This disease has thrown great obstacles in " the way of internal trade, as the muleteers " were afraid of approaching the port of Vera " Cruz.

" 8. All the vessels stated in the column of " vessels from America, are not to be con- " sidered as ships employed in the commerce " of the American colonies; for it frequently " happens that Spanish vessels take in silver " in Mexico, and sail for the Havannah and " Caracas, where they load with sugar and " cocoa.

" 9. During the course of the year " 1802, 196 litigated causes were determined " by the Tribunal da Consulado; and there " remains but a single suit to be deter- " mined."

Vera Cruz, 19th February,
1803.

TABLE II. (A)

Balance of the Commerce of Vera Cruz in 1803.

Importation from Spain into Mexico of national agricultural produce.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
White wine	7,597 hogs.	142,367
Red wine	17,520 ditto	267,870
Bottled wine	23,455	8,974
Vinegar	705	8,583
Brandy	31,721	1,105,859
Oil of olives	12,479½ arrob	37,722
Saffron	17,174½ lib.	344,087
Almonds	1,298 quint.	34,825
Filberts	255½ ditto	4,201
Olives	21,611 jars	30,609
Capers	193 barr.	5,609
Aromatic herbs	68 quint.	659
Linseed oil	125 ditto	250
Dried grapes	1,107 ditto	12,749
Figs	631 ditto	1,604
Prunes	36¾ ditto	797
Pickled fruits	259 arrob.	380
Hams	147 ditto	1,341
Sausages	175 doz.	350
Spices	. . .	1,287
Fruits preserved in Brandy	600 can.	300
	Total value in piastres	2,010,423

(B.)

Importation from Spain into Mexico, of the produce of the national industry.

Denomination of goods and commodities.		Quantities.	Value in double piastres.
White paper		137,958 reams	502,812
Foul paper		6,644 ditto	3,171
Thread		111¼ quint.	3,029
Corks		1,192 mill.	5,912
Ordinary delf		11,482 doz.	11,126
Wax candles		233 arrob.	4,916
Canteens		77	2,626
Fine liquors		373 arrob.	4,409
Beer		14,134 bott.	12,035
Vermicelli		746 quint.	12,532
Salt fish			5,006
Sharping stones (*dalles*)		6,307	4,857
Chairs		400	1,100
Steel		4,052¼ quint.	75,769
Bar iron		45,640 ditto	564,816
Wrought iron		3,064 ditto	53,995
Nails		142¼ ditto	1,183
Woollens, cottons and linen, muslins, silks and stockings in	*Tercios arpillados*	4,405	2,513,868
	Caxones arpillados	2,570	3,685,524
	Caxones toscos	1,513	352,116
	Baules	937	783,578
		Total value in piastres	8,604,380

(C.)

Importation from Spain into Mexico of the produce of foreign agriculture and industry.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Butter	3,660 lib.	2,747
Cheese	52½ quint.	1,840
Sausages	884 lib.	1,295
Cod	200 quint.	5,000
Beer	1,455 bott.	850
Coarse linen	48 pieces	1,536
Canteens (*frasqueras*)	273	13,250
Delf ware		66,256
Iron	100 quint.	700
Cinnamon	20,512 lib.	68,713
Cloves	6,176 ditto	18,419
Pimento	380 ditto	380
White paper	18,182 reams	64,163
Large-eagle (*grand-aigle*) paper	24 ditto	528
Steel	5,966¼ quint.	108,561
White iron	553 chests	14,742
Genoa sharping stones	1,500	1,125
Woollens, cottons, linens, silks, muslins, and stockings in	*Tercios arpillados*	13,348	5,884,467
	Caxones arpillados	470	570,461
	Caxones toscos	5,260	971,908
	Baules	101	81,545
	Total value in piastres		7,878,486

(D.)

Importation from America (Spanish colonies) into Mexico.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Cocoa of Maracaybo	7,965 fan.	235,040
Ditto of Tabasco	13,551½ ditto	470,229
Coffee	474 quint.	10,720
Havannah wax	26,470 arrob.	455,760
Campeachy wax	582½ ditto	6,281
Campeachy wood	38,444 quint.	57,045
Starch	1,711 arrob.	4,079
Rice	619½ ditto	466
Pitch	338 hogs.	2,028
Tar	548 ditto	2,760
Sacks (*sacas*)	21,697	5,421
Ditto (*costales*)	132,811	35,450
Straw hats	3,082 doz.	2,413
Packthread	3,329¼ arrob.	7,685
Matches	442¼ ditto	2,187
Blankets and Hammocks	883	1,490
Salt	31,783 fan.	47,037
Salt fish	4,000 arrob.	14,050
Cables		4,250
Tortoise shell	826 lib.	5,150
Various articles		5,887
Total value in piastres		1,373,428

(E.)

Exportation from Mexico for Spain.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Cochineal { *Grana*	27,251 arrob.	2,191,399
Cochineal { *Granilla*	1,573 ditto	40,226
Cochineal { *Polvo de grana*	786 ditto	7,048
Indigo	149,069 lib.	263,729
Vanilla	968½ mill.	31,625
Sugar	483,944 arrob.	1,495,056
Cocoa of Guayaquil	3,995½ fan.	98,794
Ditto of Caracas	480½ ditto	17,298
Ditto of Maracaybo	1,739½ ditto	53,936
Ditto of Soconuzco	3,959 lib.	2,599
Campeachy wood	26,635¼ quint.	49,019
Furs		22,549
Pimento of Tabasco	5,755½ ditto	36,981
Cotton in grain	17,327 ditto	35,910
Roucou	374 arrob.	3,838
Cabinet wood { *(Bois de meubles)*		14,345
Sarsaparilla	4,912½ quint.	86,980
Jalap	2,281½ ditto	61,971
Balms		5,000
Silver		7,356,530
Gold		142,229
Total value in piastres		12,017,072

(F.)

Exportation from Mexico for other parts of Spanish America.

Denomination of goods and commodities.	Quantities.	Value in double piastres.
Flour . . .	19,496 ter.	275,905
Sugar . .	6,348 ditto	19,826
Cocoa of Guayaquil	459½ fan.	12,429
Campeachy wood .	6,871 quint.	11,792
Raw hides . .	3,000	3,161
Cochineal .	152 arrob.	12,160
Skins . . .	. .	71,905
Cotton . .	5,974 ditto	11,397
Soap . . .	1,766 chests	44,350
Gold leaf . .	. .	1,650
Serge . . .	14,732 varas	4,705
Aniseed . . .	1,022½ arrob.	1,802
Delfware . .	692 chests	2,220
Baize *(Bayettes)* .	1,300 varas	1,673
Different articles .	. .	40,496
Eatables . . .	. .	83,267
Wrought copper .	14,444 lib.	8,849
Tin	58½ quint.	1,483
Lead . . .	100 ditto	900
Silver . . .	. .	1,834,146
Gold . . .	. . .	21,730
	Total value in piastres	2,465,846

RESULT.

Balance of the commerce of Vera Cruz in 1803.

		piastres.	piastres.
Importation from Spain	In national productions	10,614,803	18,493,289
	In foreign productions	7,878,486	
Exportation for Spain			12,017,072
Difference in favour of the importation			6,476,217
Total commerce of the mother country with Vera Cruz.			30,510,361

Importation from America	1,373,428
Exportation for America	2,465,846
Difference in favour of the exportation	1,092,418
Total commerce of America with Vera Cruz	3,839,274

	piastres.
Total importation	19,866,717
Total exportation	14,482,917
Total amount of the commerce of Vera Cruz	34,349,634

The commerce of Vera Cruz was carried on in 1803 by 419 vessels of which

Came	From Spain	103	Bound for	Spain	82
	From America	111		America	123
		214			205

OBSERVATIONS.

1. "The table of the balance drawn up by "the consulado of Vera Cruz having obtained "the approbation of the court and all the "bodies of the state, we continue to give the "greatest publicity to whatever relates to "the commerce of New Spain. We have "not included among the objects of importa- "tion and exportation 5,000 quintals of "mercury, 280,000 reams of paper destined "for the manufacture of tobacco, 4,000 quintals "of iron embarked in ships of war, 12,300 "quintals of plates of copper, and five millions of "piastres sent into Spain, as well as 1,200,000 "piastres sent to the West India Islands "for the maintenance of fortresses, because "all these articles were exported and im- "ported on account of government."

2. "There were three shipwrecks this year "on the island of Cancun and the sand-bank "of Alacran. The insurance company esta- "blished the 17th July insured in six months "to the value of 746,000 piastres. The poli- "tical circumstances of Europe and the dread

" of a maritime war have fettered the commerce " of Vera Cruz, so that its activity was much " less than it was in the former year."

Vera Cruz, 28th of January, 1804.

From these tables of the commerce of Vera Cruz published by the *Consulado,* on adding the goods imported on account of government to those which are the object of mercantile speculation, we find,

Commerce of Vera Cruz.	In 1802. Value. In piastres	In liv. tournois	In 1803. Value. In piastres	In liv. tournois
Exportation	57,947,000	304,221,750	20,922,000	109,840,500
Gold and silver	41,800,000	256,200,000	15,554,000	81,658,500
Agricultural produce	9,147,000	48,021,750	5,368,000	28,182,000
Importation.	24,100,000	126,525,000	22,975,000	120,618,750
Total commerce	82,047,000*	430,746,750	43,897,000†	230,459,250

The one of these years exhibits an extraordinary commercial activity, because after a long maritime war, Europe began to enjoy the benefits of peace; and the other presents a less brilliant view, because from the month of June the dread of an approaching war put a stop to the exportation of the precious metals and agricultural produce of New Spain.

* £16,856,870 ster. *Trans.*

† £9,218,370 ster. *Trans.*

The Consulado of Vera Cruz counts among its members men equally distinguished for their knowledge and their patriotic zeal. It acts both as a court of justice *(tribunal)* in disputed commercial cases, and as an administrative council entrusted with the maintenance of the port and roads, hospitals, the police of the town, and whatever relates to the progress of commerce. This council is composed of a *prior*, two *consuls*, an *assessor*, a syndic and nine councillors. They decide litigious causes *gratis* on verbal declarations, and without any intervention of lawyers. To the activity of the Consulado of Vera Cruz we owe the undertaking of the road of Perote, which in 1803 cost per league more than 480,000 francs*, the amelioration of the hospitals, and the construction of a beautiful giratory light-house, executed after the plan of the celebrated astronomer, *M. Mendoza y Rios*, at London. This light-house consists of a very elevated tower, placed at the extremity of the castle of San Juan d'Ulua, which with the lantern cost nearly half a million of francs†. The lamps with a current of air and furnished with reflectors, are fixed on a triangle which turns by means of clock work, so that the light disappears whenever the machine pre-

* £19,200 Sterling. *Trans.*

† £20,000 Sterling. *Trans.*

sents one of its sharp angles to the entry of the port. At my departure from Vera Cruz, the Consulado were occupied with two new projects of equal utility, the supplying the town with potable water, and the construction of a mole, which advancing in the form of a pier may resist the shock of the waves. We had occasion to examine the former of these projects when treating of the dike of the Rio de Xamapa*.

In all parts of Spanish America there is a decided antipathy between the inhabitants of the plains or warm regions, and the inhabitants of the table land of the Cordilleras. The European traveller is forcibly struck with this antipathy, whether he ascends the river Magdalen for Carthagena at Santa Fe de Bogota, or climbs the chain of the Andes in his way from Guayaquil to Quito, from Piura and Truxillo to Caxamarca, or from Vera Cruz to the capital of Mexico. The inhabitants of the coast accuse the mountaineers of coldness and want of vivacity; and the inhabitants of the table land reproach those of the coast with levity and inconstancy in their undertakings. One would almost say that nations of a different origin have settled in the same province; for a small extent of ground unites besides the climate and productions all the

* See Vol. II. p. 266.

national prejudices of the north and south of Europe. These prejudices nourish the rivalry which we observe between the merchants of Mexico and Vera Cruz. Near to the seat of government, the former know how to avail themselves of their central position. A viceroy who arrives in New Spain, finds himself placed among the different parties of the lawyers, clergy, proprietors of mines, and the merchants of Vera Cruz and Mexico. Each party aims at rendering its adversaries suspected, by accusing them of a restless and innovating disposition, and a secret desire of independence and political liberty. Unhappily the mother country has hitherto believed its security consisted in the internal dissensions of the colonies; and far from quieting individual animosities, it saw with satisfaction the origin of that rivalship between the natives and the Spaniards, between the whites who inhabit the coast and those who are fixed on the table land of the interior.

If the port of Vera Cruz, although it presents but a bad anchorage among sand banks annually receives four or five hundred vessels, the port of Acapulco* which is one of the finest in the known world, on the other hand scarcely receives the number of ten. The commercial

* See Vol. I. p. 85, and Vol. II. p. 186.

activity of Acapulco is confined to the Manilla galeon, known by the improper name of *China ship* (nao), to the coasting trade with Guatimala, Zacatula, and San Blas, and to four or five vessels annually dispatched to Guayaquil and Lima. The distance from the coast of China, the monopoly of the Philippine company, and the extreme difficulty of ascending against the current and winds towards the coast of Peru, impede the commerce of the western part of Mexico.

The port of Acapulco forms an immense basin cut in granite rocks open towards the south south west, and possessing from east to west more than 6,000 metres in breadth*. I have seen few situations in either hemisphere of a more savage aspect, I would say at the same time more dismal and more romantic. The masses of rocks bear in their form a strong resemblance to the dentilated crest of Montserrat in Catalonia. They are composed of granite of a large grain like that of Fichtelberg and Carlsbad in Germany. This granite is stratified, but the banks are irregularly inclined, sometimes to the south and sometimes to the south east. This rocky coast is so steep that a vessel of the line may almost touch it without running the smallest danger, because there is every where from 10 to 12 fathoms water.

* 19,685 feet. *Trans.*

The small island of Roqueta or Grifo is so placed that we may enter the port of Acapulco by two passes, of which the straitest called *Boca Chica* forms a channel from west to east containing between the point of Pilar and that of Grifo only 240 metres* in breadth. The second pass or the *Boca Grande* comprised between the Island de la Roqueta and the Punta de la Bruxa has an opening of a mile and a half. In the interior of the creek we every where meet with from twenty-four to thirty-three fathoms of water. They distinguish vulgarly the port properly so called, and the great creek called *Bahia*, where the sea is strongly felt from the south west on account of the breadth of the *Boca Grande*. This port comprehends the most western part of *la Bahia* between *Playa Grande* and *L'Ensenada de Santa Lucia*. Vessels find there close by the land an excellent anchorage in from six to ten fathoms water. We anchored there with the frigate Orue, in the month of March 1803, thirty-three days after our departure from Guayaquil.

On examining the narrow isthmus which separates the port of Acapulco from the Bay *de la Langosta de la Abra de San Nicolas*, one would almost say that nature wished to form in this place a third pass similar to those

* 787 feet. *Trans.*

of the *Boca Grande* and the *Boca Chica*. This isthmus which is at most 400 metres* in breadth is very interesting in a geological point of view. We climbed up naked rocks of a strange form; they were scarcely 60 metres of elevation† and appeared to be torn by the prolonged action of earthquakes which are frequent on that coast. It is observed at Acapulco that the shakes take three different directions, sometimes coming from the west by the isthmus of which we are speaking, sometimes from the north west as if they were from the volcano de Colima, and sometimes coming from the south. The earthquakes which are felt in the direction of the south are attributed to submarine volcanoes; for they see here, what I often observed at night in the Callao of Lima, that the sea becomes suddenly agitated in a most alarming manner in calm and serene weather when not a breath of wind is blowing.

The Bay of Acapulco contains in its vast extent but one shallow which is not 40 metres in depth‡, and which has the name of St. Anne, because it was found out in 1781, by the unexpected loss of the ship *Santa Ana* belonging to the trade of Lima. *Las Baxas*, which are

* 1312 feet. *Trans.*

† 196 feet. *Trans.*

‡ 131 feet in depth. *Trans.*

stones that we skimmed at our entry through the Boca Grande, the *Farallon del' Obispo*, and the small island of San Lorenzo near the Punta de Icacos are not in the least dangerous, because they are visible shelves. These masses of rock which we approach without fear of touching, may be considered as fragments of the old coast. South east from the Punta de la Bruxa is the small port of the Marqués. It forms a bay of a mile in breadth, and is at its entry from 18 to 20 fathoms, and in the interior from eight to ten fathoms in depth. This bay is not frequented on account of its proximity to the port of Acapulco. It is a wild and solitary place, in which, however, we should soon see a populous city, if it were situated on the eastern coast of New Spain.

The landing of the ports of Realesco, Sonzonate, Acapulco, and San Blas is very dangerous in winter, that is to say, during the rainy season, which lasts on all the western coast of America*

* With the exception of Guayaquil, where the rains last from the month of December till April and May. It pours down in torrents at Guayaquil, while a great drought prevails not only at Panama but also to the north of Cape St. Francis at Atacamez. I shall have occasion to treat in another place of these contrasts in the seasons between the Cordilleras and the coasts, and frequently the different points of the same coast. It is sufficient to state in this place that in general it is not true that under the tropics the rainy and dry seasons succeed each other every where, agreeably to the laws observed in the West India Islands.

between the island of Chiloe and California from May till December. The beginning and end of winter are most to be dreaded. Great hurricanes are experienced* in the month of June and September, and we then find on the coasts of Acapulco and San Blas as rough and angry a sea as we find in winter near the island of Chiloe and the coast of Gallicia, and the Asturias. The great ocean only merits the denomination of Pacific between the parallels of Coquimbo and Cape Corientes, that is between 30° south latitude and 5° north latitude. In this region a constant serenity prevails. Gentle winds from the south south west and south east blow there during the whole year, and the seasons have almost no perceptible influence on them. Between 5° north latitude and Berings Straits, there prevails in the eastern part of the great ocean in winter, that is to say, from the month of May till the month of October, south south west†, and even south south east winds which go all by the general names of *bendavales*; and in summer, that is to say, from the month of November till the end of April the *brisas* or north and north east winds continue to blow. The *bendavales* are stormy, and accompanied with thick clouds, which near the land, espe-

* Vol. I. p. 85.

† Vientos del tercer quadrante.

cially in August, September, and October, burst in heavy rains of twenty or twenty-five days continuance. These rains destroy the fruits of the earth while the south west wind tears up the largest trees. I saw near Acapulco a bombax-ceiba-tree the trunk of which was more than seven metres in circumference* blown down by the *bendavales*. The *brisas* are mild and frequently interrupted by dead calms, and they blow during a beautiful and serene sky as is generally the case with all the winds which have the same denomination as the hemisphere in which they prevail.

Near Acapulco, and the fact is very important to the pilots who frequent these latitudes, the north *monsoons* constantly incline to the north west. The north east wind† which we find out at sea and in more southern latitudes, is very rare, and the true west wind is dreaded from its extreme violence. It is probable that the breadth of the continent, and the ascending current that is formed on a land strongly heated, occasion these movements of

* 23 feet. *Trans.*

† The land wind (*terral*) which blows during the night and till eight or nine o'clock in the morning, at Sonzonate, Rialexo, and Acapulco, is however, east and north east; and it is by means of this trifling wind that vessels ascend in summer, if they have the misfortune of approaching land east from Acapulco.

the atmosphere towards the east, and that this effect becomes insensible in proportion to the distance from the continent. The regularity of the monsoons, and the changes in the direction of the wind, depending on the influence of the seasons, are only felt at a distance from the coast of four or five degrees in longitude. Farther to the westward the great ocean exhibits the same phenomena as the Atlantic Ocean; for we find during the whole course of the year between the tropics the trade wind, which might be called the *wind of the rotation of the earth*, and which inclines according to the denomination of the hemisphere to which it blows sometimes to the north and sometimes to the south. It sometimes happens that vessels coming from Chili or Lima get into longitudes too far to the west through fear of touching land to the east of Acapulco; and they wait there in vain for the north west wind which never blows at a distance from the coast. The north east compels them to rise as high as the parallel of 20° to approach the continent which stretches out in a direction from south east to north west; for there only at 40 leaguess from land can they fall in with the north west wind which brings them into port. These same winds from the west, force the galeon of Acapulco when it returns to Manilla to steer southwards to the 12° or 14° of latitude. In these parallels,

and at 103° of longitude, and consequently more than two hundred leagues west from the coast of Guatimala, the galeon gets the trade winds (east and east north east) which accompany it to the Mariana Islands.

The trade of Acapulco with the ports of Guayaquil and Lima is far from being active; and the principal objects are copper, oil, some Chili wine, a very small quantity of sugar, and quinquina of Peru, and the cocoa of Guayaquil destined either for the interior consumption of New Spain, for the Havannah and the Philippine islands, or in time of war, for Europe. The lading of the vessels which return to Guayaquil and Lima is very trifling, and is confined to a few woollens of the manufactures of Queretaro, a small quantity of cochineal, and contraband East India goods. The length and the extreme difficulty of the navigation from Acapulco to Lima are the greatest obstacles to trade between the inhabitants of Peru and Mexico. From the Callao de Lima to Guayaquil is easily navigated in the space of six or eight days; and from Guayaquil to Acapulco requires three, four, and five weeks; but the passage from the northern to the southern hemisphere, from the coast of Mexico to the coast of Quito and Peru, is a continual struggle against winds and currents. The distance from Guayaquil to Callao is only 210 marine leagues, yet very often more time is required for this short passage from north to

south, than from Acapulco to Manilla by a course of more than 2,800 marine leagues; and it also frequently happens that more weeks are necessary to go from Guayaquil to the Callao than days from the Callao to Guayaquil.

Three things are to be dreaded in the passage from the coast of Peru to New Spain; the dead calms which particularly prevail near the line; the furious winds known by the name of *papagallos* of which we have already spoken at the end of the third chapter; and the danger of getting on land to the east of Acapulco. The calms are the more dangerous, because while they last the currents are at the strongest. Moreover the Spanish vessels employed in the South Sea trade are so ill constructed, that with very moderate winds they are driven about by these currents. The parallels where the currents are felt with the greatest force, are the Gallapagos Islands first examined by Mr. Collnet with something like accuracy. There have been examples of Spanish vessels constructed at Guayaquil, and obeying very badly the helm, which have cruised among the islands for two months, without any power of getting away from them, and risking every moment in the midst of a dead calm to be carried by currents* on the shore which is every where shelvy. The Peruvian pilots endeavour to cross the line

* *Vancouver*, iii. p. 404.

seven or eight degrees east from the Galapagos Islands. The English and Anglo-Americans* who enter these latitudes for the spermaceti whale or cachalot fishery are much less afraid of this archipelago than the Spaniards; and they frequently touch there for the purpose of getting turtles, an agreeable and salutary food to mariners, and of landing the diseased seamen. As the whalers are nicely constructed, they experience less drift from the feeble winds.

After escaping from the calms which prevail under the equator, between Cape St. Francis and the Galapagos Islands, the Peruvian vessels fall in with about the 13° 30′ and 15° of north latitude, and the 103° and 106° of west longitude, another region equally formidable from the frequent calms in the months of February and March. In the year which preceded that in which we visited these seas, a dead calm of twenty-eight days with a want of water, in consequence of it, forced the crew of a ship newly built at Guayaquil, to abandon a rich cargo of cocoa, and save themselves in a boat to make the land, which was eighty leagues distant. Similar accidents are not uncommon in the South Sea, where the pilots have the blameable custom of taking in a very small number of casks of water, to have more room for goods.

* See Vol. III. chap. x. p. 88.

The calms which prevail in the parallel of 14° north, and which are only to be compared with those of the gulph of Guinea, are the more to be feared, as they are experienced at the end of the passage.

In the navigation from the Callao, and from Guayaquil to Acapulco, they endeavour to land west from the port, on account of the winds and currents which have a very regular direction near the coast. They generally endeavour to steer for the sand banks of Signantizo, situated at more than forty leagues distance to the west-north-west of Acapulco, a little to the west of the Morro de Petatlan. These banks being very white are seen at sea, at a distance of four leagues. After passing them, they follow the coast steering to the south east, towards the point of Satlan and the beautiful shores of Sitiala and Coyuca, which are covered with palm trees. They know the port of Acapulco, merely from the nipples (*tetas*) of Coyuca and the great Cerro de la Brea or Siclata. This mountain, visible at sea at 38 miles distance from the port, is situated to the west of the Alto del Peregrino, and, like the Pic d'Orizaba, the Campana de Truxillo and the Silla de Payta, serves for a signal to navigators. From the coasts of California and Cinaloa to Acapulco, and frequently even to Tehuantepec, the current runs from December to the month

of April, in the season which they agree to call *summer*, from the north-west to the south-east; and in winter from the month of May, to the month of December the current runs to the north-west, most frequently west-north-west. On account of this motion of the waters of the ocean, which is only felt at forty leagues distance from the coast, a passage from Acapulco to San Blas lasts from twenty to thirty days in summer, while in winter it lasts only from five to six days.

On the western coast of the New Continent, between the 16° and 27° of north latitude, a navigator without means of finding his longitude, may be sufficiently sure, if the observation of latitude places him to the north of the *loch*, that his vessel has been carried by the currents towards the west; while on the other hand, his longitude will be farther east than he finds from his reckoning, if the observed latitude is less than the latitude of his reckoning. But south of the parallel of 16° north, and in the whole southern hemisphere, these rules become very uncertain, as I was convinced from carefully comparing in the eastern part of the great ocean day after day, the *point of reckoning* with the chronometrical longitude and observations of the sun and moon. Enormous errors in longitude occasioned by the strength of the currents, render navigation

in these latitudes equally long and expensive. Errors accumulate in passages of 2000 leagues, and nowhere is the use of timekeepers and the employment of the method of lunar distances more indispensible than in a sea basin of so vast an extent. Hence for several years past even the most ignorant pilots begin to feel the great utility of astronomical observations. I knew at Lima, Spanish merchants who had purchased time-keepers for six or eight thousand francs, with the view of embarking them in their newly built ships. I learned with satisfaction, that even several English and Anglo American vessels which double Cape Horn, for the whale fishery, and for visiting the north-west coast of America, are provided with chronometers.

The passage from Acapulco to Lima, is frequently longer, and more difficult than a navigation from Lima to Europe. It is executed in winter by ascending to the 28° or 30° of south latitude, before approaching the coast of Chili; and sometimes they are forced to steer to the south south-west beyond the island of Juan Fernandez. This navigation *por altura*, of which the first example was given in 1540 by Diego de Ocampo under Antonio de Mendoza the viceroy of Mexico, generally lasts from three to four months; but a few years ago the ship *Neptune* belonging

to the trade of Guayaquil took seven months in going from the coast of Mexico to the Port of Callao.

In summer, from the month of December, to the month of May, they ascend from the Point Pariña* (lat. 4° 35′ south; long. 83° 45′) to Lima, by means of the *Terral*. This track goes by the name of *Navigation por el meridiano*, because instead of keeping three or four hundred leagues west from the coast, they endeavour to change the longitude in a very small degree. In Peru, between Paita and the Callao, in Mexico, between Sonzonate and Acapulco, and in general on the greatest part of the coast under the torrid zone, the land wind is very cool during the night; it varies from the south east to south east ¼ to the east; while between Cape Blanc and Guayaquil, the wind blows by night from the sea towards the land. The pilots know how to take advantage of this circumstance whenever they get to Punta Pariña. They tack for eighteen hours out at sea to the south-south-west; and at night when the land wind rises, they turn the head towards the coast for the other six hours, plying to windwards with full sail on account of the currents. In the *Navigation by the meridian*, they should not

* See my *Recueil d'Observ. Astronom. redigé par M. Oltmanns*, Vol. II. p. 430.

keep more than sixty or seventy leagues from shore. A Portugueze pilot lately showed that this method may even be followed during winter* if the vessel sufficiently obey the helm, and it possesses besides the great advantage of shortening the road. By following it, the tempests which prevail in the months of August, September, and October, between the 28° and 33° of south latitude are avoided. I have thought it proper to mention these details respecting the navigation of the eastern part of the great ocean in this place, not only because they are interesting to the commerce of the New Continent, but because they prove a principle which ought powerfully to influence all political calculations; namely, that nature has thrown enormous obstacles in the way of maritime communication, between the people of Peru and Mexico. In fact, these two colonies, which from their position are not far removed from one another, consider themselves as much in the light of strangers, as they would the people of the United States, or the inhabitants of Europe.

The oldest and most important branch of commerce of Acapulco, is the exchange of the merchandize of the East Indies and China, for the precious metals of Mexico. The commerce

* *Moraleda Derotero de la mer del Sur*, (a very valuable manuscript).

limited to a single galleon, is extremely simple; and though I have been on the spot where the most renowned *fair* of the world is held; I can add little information to that which has been already given before by others*.

The galleon which is generally from twelve to 1500 tons, and commanded by an officer of the royal navy, sails from Manilla in the middle of July or beginning of August, when the south west monsoon is already completely established. Its cargo consists in muslins, printed calicoes, coarse cotton shirts, raw silks, China silk stockings, jewelleries from Canton or Manilla by Chinese artists, spices, and aromatics. The voyage is carried on either by the straits of Saint Bernardin or Cape Bajadoz, which is the most northern point of the island of Lucçon. It formerly lasted from five to six months; but since the art of navigation has been improved, the passage from Manilla to Acapulco is only three or four months. Winds from the north-west and south-west prevail in the great ocean, as well as generally in all seas beyond the natural limits of the trade winds, to the north and south of the parallel of 28° and 30°. Opposite in their direction to the trade winds, they may be considered as atmospherical *counter currents*. By

* *Anson's Voyage*, Vol. ii. chap. X, p. 63, 73; *Le Gentil*, ii. p. 216; *Raynal*, ii. p. 90; *De Guignes*, iii. p. 407; *Renouard de Saint Croix*, II. p. 357.

means of the south-west winds, during my stay in Peru, English vessels, excellent sailors it must be owned, came from the Cape of Good Hope to Val Paraiso in Chili, in ninety days, although they had to run from west to east nearly two thirds of the circumference of the globe. In the northern hemisphere, the north-west wind facilitates the passage from the coast of Canada to Europe, as well as that from the east of Asia to the western coast of America.

Formerly the galleon ascended as high as the 35° of north latitude to work for the high mountains of Santa Lucia in New California which rise to the east of the channel of Santa Barbara; but within the last twenty years they have kept much farther to the south; for after falling in with the island of Guadaloupe (lat. 28° 53′,) the pilots steer south-east, avoiding the dangers of the shoal called *Abreojos*, and the two *farallons de los Alisos*. It is a very convenient circumstance, that in all this long passage, the galleon finds not a single point of shelter from Manilla to the island of Guadaloupe and the coast of California. It is a pity that to the north of the Sandwich Islands no other archipelago has been discovered, which, situated between the Old and New Continent, might have afforded refreshments and a good anchorage.

The value of the goods of the galleon ought not by law to exceed the sum of half a million

of piastres*, but it generally amounts to a million and a half or two millions of piastres †. Next to the merchants of Lima, the ecclesiastical corporations have the greatest share in this lucrative commerce, in which the corporations employ nearly two thirds of their capitals, which employment of their money is designated by the improper phrase of *dar a corresponder*. Whenever the news arrive at Mexico, that the galleon has been seen off the coast, the roads of Chilpansingo and Acapulco are covered with travellers; and every merchant hastens to be the first to treat with the supercargos who arrive from Manilla. In general, a few powerful houses of Mexico join together for the purpose of purchasing goods; and it has happened that the cargo has been sold before the news of the arrival of the galleon were known at Vera Cruz. This purchase is often made without opening the bales; and although at Acapulco the merchants of Manilla are accused of what is called *Trampas de la China*, or *Chinese fraud*, it must be allowed that the commerce between two countries at the distance of three thousand leagues from one another, is carried on perhaps with more honesty than the trade between some nations of civilized Europe, who have

* £105,000 sterling. *Trans.*

† £315,000, or 420,000 sterling. *Trans.*

never had any connection with Chinese merchants.

While the merchandizes of the East Indies are transported from Acapulco to the capital of Mexico to be distributed throughout the kingdom of New Spain, the bars of iron and piastres, intended for the return cargo, descend from the interior to the coast. The galleon generally departs in the month of February or March; and it goes then nearly with ballast; for the lading in the journey from Acapulco to Manilla in general only consists of silver, a very small quantity of cochineal of Oaxaca, cocoa of Guayaquil, and Caraccas wine, oil, and Spanish wool. The quantity of precious metals exported to the Philippine Islands, including what is not registered, amounts in general to a million, and frequently to one million three hundred thousand piastres. The number of passengers is in general very considerable, and augmented from time to time by colonies of monks sent by Spain and Mexico to the Philippine Islands. The galleon of 1804, carried out seventy five monks which gave occasion to the Mexicans for saying that the *Nao de China* was loaded in return with *plata y frayles*.

The navigation from Acapulco to Manilla is carried on by means of the trade winds. It is the longest that can be made in the equinoctial region of the seas, being almost triple the

passage from the coast of Africa to the West India Islands. The galleon as we have already observed, takes its route first towards the south profiting by the north west winds, which prevail on the northern coast of Mexico. When it arrives in the parallel of Manilla, it carries full sail to the west, having always a tranquil sea, and refreshing breezes from the point between the east and east north east *. Nothing interrupts the serenity of the heavens in these regions, except sometimes a slight squall, which is felt when the vessel arrives at the zenith. Don Francisco Maurelli a pilot, had the boldness to cross the whole of the great ocean for a length of nearly three thousand marine leagues in a decked launch (*lancha de navio;*) this launch, called the Sonora, was dispatched from San Blas, to carry to Manilla the news of the last rupture between Spain and England; and it is preserved in the Port of Cavite, as the boat in which the unfortunate Captain Bligh carried on his memorable navigation from the Society to the Molucca Islands ought to have been preserved at Timor.

In the same proportion that the passage from Manilla to the coast of Mexico is long and

* Farther north, especially between the 20° and the Tropic of Cancer, the trade winds are not so constant in the great ocean as in the Atlantic.

painful, the passage from Acapulco to the Philippine Islands is short and agreeable. It generally lasts only from fifty to sixty days. From time to time within these few years the galleon touches at the Sandwich Islands to take in provisions and water, if the priests of the country have not *tabooed* the watering place. As the passage is not long, and the chiefs of these islands are not always friendly disposed towards the whites, this delay, which is seldom necessary, is frequently dangerous. As the galleon advances towards the west the breezes become stronger, but at the same more inconstant. The galleon touches at the island of Guahan or Guam where the governor of the Mariana island resides in the town of Agana*. It has been truly observed that this island is the only point in the vast extent of the South Sea, strewed with innumerable islands, which contains a town built in the European manner, a church and a fortification.

However, this delicious country which nature has enriched with the most varied productions, is one of those numerous possessions from which the court of Spain has never yet derived any advantage. The fanaticism of the monks, and the sordid avarice of the governors, formerly conspired to depopulate this archipelago. The

* *Surville Nouveau Voyage au Mar du Sud*, p. 176.

commandant of the fort of Agana is one of the officers of the King of Spain, who can with the greatest impunity exercise an arbitrary power. He has no communication with Europe, and the Philippine islands except once a year; and if the *nao* is intercepted or if it is lost in a tempest, he remains for several years completely insulated. Although the distance from Madrid to Agana is 4,000 leagues east in a straight line, it is said that the governor of Guahan on seeing the galleon arrive two years in succession expressed a desire to *reside in an island more remote from Spain*, that he might be less exposed to the controul of ministers.

The galleon carries to the colony of the Mariana islands *(islas de los Ladrones)*, besides the *situado* that is to say, the money destined to pay the troops and the *royal officers*, woollens, linens, cottons, and hats for the dress of the small number of whites who inhabit this archipelago. The governor supplies the galleon with fresh provisions, particularly with pork and beef. Horned cattle have multiplied in a wonderful manner in this island, where there is a beautiful breed of white oxen with black ears. Commodore Byron* affirms, having seen at the island of Saypan situated to the north of Tinian, which

* *Hawkesworth's Compilation.* Vol. i. p. 121.

has mountains of small elevation, *huanacos* like those of Peru. This observation deserves to be verified by naturalists. The Spaniards having introduced neither *llamas* nor *huanacos* nor *alpacos* into Mexico or the kingdom of New Granada, it appears very improbable, that they should ever have transported them into a group of islands in the vicinity of Asia*.

Besides the galleon of Acapulco, from time to time a vessel is also dispatched from Manilla to Lima. This navigation, one of the longest and most difficult, is ordinarily carried on by the same northern route with the passage from the Philippine islands to the coast of California. The galleon destined for Lima, after discovering the coast of Mexico, steers southwards to the 28° and 30° of south latitude where the south west wind prevails. When Peru, liberated from the yoke of the monopoly of the Philippine company, shall be allowed to trade without restriction to the East Indies, in returning from Canton to Lima the preference will most likely be given to a track which goes to the south of New Holland through seas where they are secure of favourable winds.

A few years before my stay at Lima, Don Josef Arosbide brought the galleon *el Fillippino* in ninety days, by a direct tract from west to

* *Voyage de Marchand.* T. i. p. 436.

east from Manilla to the Callao. Favoured by light variable winds which blow especially by night in the vicinity of the South Sea islands, he ascended between the parallels of 6° and 10° south against the *current of rotation*. The dread of falling into the hands of English cruisers led him to make choice of a track so extraordinary and opposite to the direction of the trade winds. Forgetting that chance had a great share in the success of a voyage during which the calms were interrupted by squalls from the south and south west*, M. Arosbide wished to try the route a second time, but after long struggling against the trade winds, he was obliged to ascend to high latitudes, and to follow the old method of navigation. He was obliged to put into the port of San Blas for want of provisions where he died worn out with fatigue and disappointment.

It has been asked how it was possible for Spanish vessels since the sixteenth century to cross the great ocean from the western coast of the New Continent to the Philippine islands, without discovering the isles with which that

* M. de Fleurieu a learned navigator, has very truly observed that it is not uncommon, in the equinoctial region of the great ocean, and especially in the 15° and 18° of south latitude and the 114° and 118° of west longitude, for south south west and even north west winds to prevail for several days *(Voyage de Marchand)* T. II. p. 269.

vast sea basin is strewed. This problem may be easily resolved, if we consider that few navigations take place from Lima to Manilla, and that the archipelagoes, of which we owe the discovery to the labours of Wallis, Bougainville, and Cook, are almost all contained between the equator and the tropic of Capricorn. For these three hundred years the pilots of the Acapulco galleon have been prudent enough constantly to run the same parallel in their course from the coast of Mexico to the Philippine islands; and it appeared to them so much the more indispensable to follow this track as they imagined they should fall in with shallows and shoals whenever they deviated to the north or south. At a period when the use of lunar distances and time-keepers was unknown to navigators, they endeavoured to correct the longitude deduced from the reckoning by the observation of the variation of the magnetic needle. It had been very early remarked that the variation was nearly 0 at the strait of San Bernardino; and in 1585 Juan Iayme embarked with Francisco Gali from Manilla to Acapulco, to prove an instrument of his invention for finding the variation of the needle*.

* *Viage al estrecho de Fuca*, p. 46. *Voyage de La Perouse*, T. II. p. 306. I found in the month of December 1803, the magnetic variation at Mexico (lat. 19° 25′ 4″ north, west

This method of correcting the reckoning might be useful at a period when few pilots knew their longitude within nearly eight or ten degrees. It has been proved by very accurate observations in our days that the variation of the magnetic needle is extremely slow in these parallels, even in approaching the straits of San Bernardino.

Moreover we are not to be surprised that galleons laden with cargoes of the value of six or seven millions of francs, have never been tempted to abandon this track prescribed to them. Real expeditions of discovery can only be carried on at the expence of a government; and it cannot be denied that under the reigns of Charles V., Philip II., and Philip III., the viceroys of Mexico and Peru gave encouragement to a great number of undertakings calculated to give celebrity to the Spanish name. *Cabrillo* visited in 1542 the coast of New California or New Albion to the 37° of latitude. Gali, in going out of his track to the north in his return from China to the coast of Mexico, discovered in 1582 the mountains of New Cornwall, covered with eternal snows, and situated in the 57° 30′ north. The expedition of *Sebastian Viscayno* discovered the

long. 101° 25′) 8° 8′ to the east; and in the South Sea, at 13° 50′ of north latitude 106° 26′ of longitude, 6° 54′.

coast between Cape Saint Sebastian and Cape Mendocino. In 1542, *Gaetano* had already found several scattered islands not far from the group of Sandwich islands; and it cannot be called in question, that even this last group was known to the Spaniards for more than a century before the voyage of Cook; for the island of Mesa indicated on an old chart of the galleon of Acapulco is the same with the island Owhyhee, which contains the high mountain of the *table* or *Mowna-Roa**. *Mendaña* accompanied by *Quiros*† discovered in 1595 the group of islands, known by the name of the Marquesas de Mendoça or Mendaña islands, which comprehends San Pedro or O-Nateya, Santa Christina or Wahitaho, la Dominica or O-Hivahoa, and la Madalena. We owe to the same intrepid navigators the discovery of the islands of Santa Cruz de Mendaña named by Carteret Queen Charlotte's Islands; the

* Voyage de Marchand. T. i. p. 416.

† Alvaro Mendaña de Neyra and Pedro Fernandez de Quiros. See *Successos de las islas Filippinas* (Mexico 1699) cap. vi. *Hechos de Don Garcia Hurtado de Mendoza, marques de Canete, virey del Peru, los escribò el Doctor Don Christobal Suarez de Figueroa*, p. 238. After the death of Mendaña, his wife Doña Isabella Baretos, celebrated for her strength of mind and extraordinary courage, assumed the command of the expedition, which was terminated in 1596.

Archipelago del Espiritu Santo de Quiros*, which are the New Cyclades of Bougainville and the New Hebrides of Cook; the Archipelago of the islands of Solomon de Mendaña called by Surville† the Arsacides; the islands Dezena (Maitea) Pelegrino (Scylly island of Wallis), and probably also Otaheite (la Sagittaria de Quiros) which all three are part of the group of Society Islands. Is it just, therefore, to say that the Spaniards have crossed the great ocean without discovering any land, when we recollect that the mass of discoveries which we have been mentioning‡, and which were made at a period when the art of navigation and nautical astronomy were very far from the degree of improvement to which they have attained in our days. The names of Viscayno, Mendaña, Quiros, and Sarmiento undoubtedly

* *Fleurieu Découvertes des François dans le sud-est de la Nouvelle Guinée*, p. 85.

† The New Georgia of Shortland (*Voyage de Marchand*, T. vi. p. 63.)

‡ I might have added to the list of discoveries of the Spaniards in the South Sea, those of Garcia Jofre de Loaisa (*Viage al estrecho de Magellanes*, p. 206), Grixalva, Gallego, Juan Fernandez, Luis Vaez de Torres, and Seyavedra Cedron, who first discovered the northern coast of New Guinea. See the beautiful chart of this southern part of the South Sea, drawn up agreeably to the learned researches of M. Dalrymple.

deserve a place beside the names of the most illustrious navigators of the eighteenth century.

We have already observed that the Archipelago of the Sandwich Islands contains a point of refreshment for the vessels from Acapulco or the north west coast of America to the Philippine Islands and China, in the same manner as the Marquis de Mendoza Islands or the Society Islands furnish an excellent anchorage and a great abundance of provisions to the vessels which double Cape Horn in quest of the furs of Nootka and Norfolk bay. Notwithstanding these advantages, the inhabitants of Mexico, interested in the commerce with Asia, would wish that the Sandwich Islands were not situated on the route from Acapulco to Manilla. They are afraid lest some European power establish settlements there, lest the islanders who are naturally active and enterprising, should be tempted to piracy on these seas. It is true that the *treaty of Karakakooa*, by which Tamaahmaah king of Owhyhee, made in 1794 a *free* and *voluntary* cession of his empire to the king of Great Britain, has hitherto had no effects more durable than so many other treaties concluded between the nations of civilized Europe. The chiefs constantly at war with one another give the preference to that nation which supplies them with the greatest

quantity of fire arms and ammunition; and these arms are in a short time afterwards constantly directed against those who are imprudent enough to furnish them. Many Europeans, for the most part vagabonds and deserters from English and Anglo-American ships, have settled among the islanders.

By their assistance an enterprising power of Europe, will one day become an easy mistress of the Sandwich Islands and settle a colony there. These islanders are excellent sailors, and many of them have already embarked in European vessels and sailed to the north west coast of America and China. They have attempted to build schooners and even armed vessels with which they project distant expeditions. The north west currents bring them large trunks of pines from the northern coast of the continent of America. All these circumstances will very much facilitate the establishment of a colony in this Archipelago. The natives of the Sandwich Islands, have profited more from their communication with Europeans than all the other South Sea islanders. The sphere of their ideas has been extended, wants have been communicated to them which they were ignorant of, and within these twenty years they have made a considerable progress towards that social state which we very improperly designate by the word civili-

zation*. This progress which would be very slow if the islanders were left to themselves, will become very rapid under European dominion; and perhaps this people will one day be as formidable on the Great Ocean as the privateers and pirates of the Bermudas and Bahama islands, and Barbary are dreaded in the Atlantic Ocean and the Mediterranean. A squadron stationed in the bay of Karakakooa, and directing their cruizes to the south and the east would become formidable to the vessels bound for the Philippine islands or China, either from Acapulco and San Blas, or from the north west coast of America.

The coasting trade on the western coast of New Spain is less considerable than what takes place between Campeche, the mouth of the Rio Huasacualco, newly called port *Bourbon*, Vera Cruz and Tampico. In following the coast from the south east to the north west, we find the following ports: Tehuantepec, los Angeles, Acapulco, Siguantejo, Zaca-

* From the effects of this pretended civilization the inhabitants of Otaheite accustomed to European tools and stuffs, gradually forget the art of making tools of stone and bone, and neglect the cultivation of the paper mulberry. See the very sage observations of M. Vancouver on the condition of these islanders since their frequent communications with Europeans. (*Voyage autour du Monde.* T. i. p. 179).

tula, Colima *, Guatlan, Navidad, Puerto Escondido, Xalisco, Chiametla, Mazatlan, Santa Maria Aorne, Santa Cruz de Mayo, Guaimas, Puerto de la Paz (or del Marques del Valle †), Monterey, San Francisco and Puerto de Bodega. This long list of ports of which the greater number contain excellent anchorage, justifies what we have already said relative to the contrast observable between the eastern and western coasts of Mexico. The strength of the currents, the constancy of the monsoons, and the tempests in winter are very unfavourable to the coasting trade. From the coast of Guatimala to the sea of Cortez, the passages are so long and difficult, that the corvettes under the command of Malaspina, two excellent sailing vessels, employed, in 1791, fifty eight days in coming from Realexo to Acapulco; and the same year the merchant ship *la Galga*, favoured by the currents and winds, reached the Azore Islands in sixty days from the time of leaving the port of Lima. The first of these passages is only 300 marine leagues, and the second 4,500 leagues.

The ports of Acapulco, San Blas, Monterey, and San Francisco, possess the finest position for the spermaceti whale fishery, and the trade

* *Cartas de Hernan Cortez*, p. 348.

† See Vol. ii. p. 321.

in beaver furs, that is any where to be found between the 28° and 60° of north latitude. We have already treated of these subjects in the tenth chapter, when describing the marine animals of the South Sea coast. The Anglo-Americans, to reach the latitudes inhabited by the Saricovians, are obliged to make the tour of the whole of the New Continent. From the 40° or 43° of north latitude, they rise to the 58° and 60° south; and after having doubled Cape Horn, they ascend the South Sea to the same northern latitudes from which they set out. During the short stay which I made in the United States in 1804, there was on the north-west coast, from fifteen to twenty American vessels *, mostly belonging to individuals of Nantucket and Boston. These vessels after exchanging their furs at Canton and Macao, for tea, raw silk, and nankeen, make the tour of the globe in returning by the Cape of Good Hope. The Mexican Spaniards, whose possessions extend to the 38° north, might reach the same coasts in the space of twenty days which the Anglo-Americans and Europeans can only reach after a navigation of six or seven months. The coast of New California, and especially the environs of Monterey contains

* In the year 1792, there were only seven. *Vancouver*, ii, p. 519.

the famous *sea ear*, of which the mother of pearl is of the most beautiful orient, and to which the islanders of Quadra Island and New Cornwall, attach as much value as to the *haliothis iris* and the *haliothis australis* of New Zealand*. On the other hand the commerce of Chili supplies the copper of Coquimbo, so much in request among the savages of the north-west coast. The colonists of Russian America excepted, no other nation is so advantageously situated for carrying on the beaver fur trade as the Mexican Spaniards.

This fur which varies in colour and fineness with the age, season, and sex, is of a jet black, and is in such estimation in China, that previous to 1780, a single fur was sold there for forty, sixty, and even a hundred and twenty piastres. Till 1787, the price kept up to seventy piastres, for those of the first quality; but since that period the importations have exceeded so much the wants of the trade, that the finest Nootka fur was sold at Canton in 1790, for fifteen piastres, to such a degree had the value, by that time been reduced. Latterly the Chinese government has sometimes prohibited the importation of furs into the ports of the south; but this prohibition has always been of very short dura-

* *Viage al estrecho de Fuca*, p. cxlviii. p. 121 and 161. *Voyage de La Perouse*, T. ii. p. 276—282; T. iv. p. 276.

tion. We see from the list of importations into Canton, from 1804 to 1806, that there has been imported in the space of three years 34,144 beaver furs*, of which nearly five-sixths came in Anglo-American vessels. During that period the medium price of the fur was from 18 to 25 piastres†. We may see from these data that the profits of the fur trade have been enormously diminished since the time when Lieutenant King, and Captain Hanna were in China; and we may also perceive how exaggerated those calculations of several writers on political economy are, who have imagined that the forty-four millions of pounds of tea annually consumed by Europeans, may be in a great measure paid with the furs of the north-west coast of America. It appears that the markets of Canton and Macao are abundantly supplied with thirty, or thirty-five thousand beaver furs

* Importation in 1804	11,176
1805	22,180
1806	788
	34,144

According to the table of Russian commerce published by the Count de Romanzow, China received by Kiachta, in all sorts of furs of marine and land animals at an average from 1802 to 1805, to the value of 1,450,000 rubles.

† Compare *Coxe's Russian Discoveries*, p. 13, and *Dixon's Voyage round the World*, p. 316, with *Renouard de Saint Croix, Voyage Commercial*, Vol. III. p. 152.

annually, and that the total value of this importation would not amount to six hundred thousand piastres. The price of furs in China will lower still more, if the Americans of the United States profit by the information acquired by the expedition of Captain Lewis, and if they open a direct trade between Hudson's Bay, Canada, and the mouth of the river Columbia.

When Europe learned from the account of Cook's third voyage the advantages of the trade in beaver skins, the Spaniards made also some feeble attempts to take a share in this trade. A commissary was sent to Monterey, in 1786, to collect all the beaver skins of the *presidios* and missions of New California: and it was then believed that they could collect as many as twenty thousand. The government at first reserved to itself exclusively the fur trade; but seeing that this measure was too unpopular, it gave to a few merchants of Mexico, the permission of sending cargoes of them to the Philippine Islands. The profits of the traders were reduced nearly to nothing, because the Spanish government loaded with exorbitant duties, this nascent branch of national industry; because the furs went through the hands of the merchants of Manilla; and because these speculations were commenced at a time when the price of furs had already considerably fallen. Of what immense profit this commerce would have been to

the Mexicans, if at the time of the expeditions of Perez, Heceta, and Quadra *, in 1774, 1775, and 1779, the court of Madrid had established factories at the road of Nootka (*Puerto de San Lorenzo*), the port of Bucarelli, or Hinchinbrook Island, in those northern regions, where the beaver furs are finer, more glossy, and thicker than they are to the south of the parallel of 48°. At that period the hunters of Kamschatka were still the sole masters of the fur trade of the north-west coast of the New Continent.

In giving tables of the commerce of Acapulco and Vera Cruz, I have confined myself to those objects of exportation and importation, which have been *registered*, that is to say, on which the duties of export and import prescribed by the Spanish laws have been paid. These duties (*derechos reales*) are paid in America † according to the regulations of 1778 and 1782, in which the prices of all the commodities attempted to be introduced into the colonies from leather, and calicoes, to chemical apparatus and astronomical instruments, were fixed in a very arbitrary manner. In pro-

* See Vol. II. p. 363.

† *Arancel general de los derechos reales de aduanas de los años* 1778 *y* 1782. *Calendario mercantil de España y Indias*, 1804. *Espiritu de los mejores diarios*, 1789, n. 170, p. 953; n. 172, p. 987; n. 173, p. 1013.

portion to this supposed value, each article pays a fixed duty of so much per cent.

A distinction is made in the Spanish colonies between the *royal* and the *municipal duties;* and this distinction takes place in all the ports, from Coquimbo to Monterey. The *puertos mayores* pay both kinds of impost, but in the *puertos minores*, the municipal duties only, are exacted. However, the system of customs is far from uniform in the different parts of America. The *alcavala* which is paid at the importation, and not at the exportation of goods, is at Carthagena 2 per cent., at Guayaquil 3, at Vera Cruz and Caracas 4, and at Lima 6 per cent. The *almoxarifazgo* of entry for Spanish produce is generally 3 per cent., and 7 per cent. for foreign commodities. The *almoxarifazgo* of clearing out is from 2 to 3 per cent. Among the municipal duties, they distinguish the *derecho del consulado*, from ½ to 1 per cent.; the *derecho del fiel executor*, and the *derecho del cabildo*. At the entry of goods into the Spanish colonies, the custom-house exacts from the *free effects*, or produce of Spanish agriculture and manufactures 9½ per cent.; from the *contributable effects* or foreign produce, manufactured in Spain, 12½ per cent; and for the *foreign effects*, 7 per cent. It is to be observed that these last goods have already paid 22 per cent. before entering any of the ports of

America; viz. 7 at leaving Spain, and 15 at their first entry into Spain. I refer the reader for the detail of the custom-house system, to an instructive work published by M. Pons on the statistics of the province of Caracas *. As he filled the situation of commercial agent, this writer was placed in the most favourable circumstances for studying every thing connected with the duties, tarifs, and customs of Spain.

The bad state of the eastern coast, the want of ports, the difficulty of landing, and the dread of *averages*, (*avaries*) render contraband trade more difficult in Mexico than on the coast of Terra Firma. The contraband is carried on almost exclusively by the ports of Vera Cruz and Campeachy. Small vessels are fitted out from these two ports in quest of goods at Jamaica, and to carry on what is called at Vera Cruz by the name of *telegraphic ways*. In time of war the frigates which blockade the road have been frequently seen to land contraband goods on the small Island of Sacrifices. In general the trade of the colonies is very animated during maritime war, which is the period when these countries enjoy to a certain degree the advantages of independence. So long as the communication with the mother country remains interrupted, the government is forced to

* *Voyage à la Terre-ferme*, T. ii. p. 357, 360, and 441; T. iii. p. 11.

relax its prohibiting system, and to allow from time to time commerce with neutrals. As the custom-house officers are not too severe in the examination of papers, the contraband is then carried on with the greatest facility; and if in time of peace it probably amounts to four or five millions of piastres annually, in time of war it undoubtedly amounts to six or seven millions. During the last rupture with England, the mother country could not introduce from 1796 to 1801, at an average more than 2,604,000 piastres * worth of national and foreign commodities; and yet in Mexico the warehouses were encumbered with India muslins, and English manufactures.

For half a century the ministry of Madrid, has regularly demanded every year, sometimes from the viceroys, sometimes from the supreme junta of finances, and sometimes from the intendants of provinces, reports respecting the means of diminishing contraband trade. In 1803, a more direct way was resorted to; and it applied to the *consulado* of Vera Cruz, composed of the principal merchants of the town. It may easily be conceived that none of these reports have ever led to the solution of a problem equally interesting to the public morals

* *Reflexiones acerca del comercio de Vera Cruz y de la influencia que ha tenido la guerra* (a very interesting MS. Memoir of *D. Jozef Donato de Austria*).

and the public revenue. Notwithstanding the *guarda costas* and a multitude of custom-house officers kept up at a great expence, and notwithstanding the extreme severity of the penal code, the contraband trade will necessarily subsist so long as the temptation of gain shall not be diminished by a total change in the custom-house system. At present the duties are so enormous, that they increase from 35 to 40 per cent. the price of foreign commodities imported in Spanish vessels.

After showing, from information procured on the spot, the importance of the internal and external commerce of Mexico, the state of the roads, and ports, the possibility of canals, the difficulties which the currents and monsoons oppose to the South Sea navigation, it remains for us to take a rapid view of the *annual augmentation of the national wealth.* We shall not in this place retrace the history of American commerce, from the time when it was confined to the galleon of Porto Bello and the fleet of Vera Cruz, to the happy period when it was freed in a great measure by Charles III. from the shackles under which it has laboured for three centuries. M. Bourgoing has treated this subject with the sagacity and perspicuity which characterize the work in which he was the first, to give Europe a correct idea of modern

Spain*. Without repeating what has been sufficiently developed by several writers on Political Economy, we shall pursue the course which we have hitherto marked out, bringing together facts, and conducting the reader by means of these facts to general results.

When we reflect on the state of the colonies before the reign of Charles III., and the odious monopoly possessed by Seville and Cadiz for centuries, of the commerce of America, we need not be surprised that the famous regulation of the 12th October, 1778, was designated by the name of the *edict of free trade*. In affairs of commerce, as well as in politics, the word freedom expresses merely a relative idea; and from the oppression under which the colonists groaned in the times of the *galleons*, the *registers*, and the *fleets*, to that state of things in which fourteen ports were nearly at the same time, opened to the productions of America, the passage is as great as from the most arbitrary despotism to a liberty sanctioned by law. It is true, that without wholly adopt-

* *Bourgoing, Tableau de l'Espagne moderne*, 4 edn. T. ii. chap. vii. viii. and ix. p. 188—296. *Laborde, Itineraire descriptif de l'Espagne*, T. iv. p. 373—384. *Encyclop. method. Economie politique*, T. ii. p. 319—324.

ing the theory of the *economists*, we might be tempted to believe that both the mother country and the colonies would have gained, if the law of a *free trade* had been followed by the abolition of a *tarif of the duties* unfavourable to American agriculture and industry; but are we to expect that Spain should have been the first to get rid of a colonial system, which notwithstanding the most cruel experience both for individual happiness and the public tranquillity, has been so long followed by the most enlightened nations of Europe?

At the period when the whole commerce of New Spain was carried on in *registered vessels*, collected together in a fleet, which arrived every three or four years from Cadiz at Vera Cruz, the purchases and sales were in the hands of eight or ten commercial houses of Mexico, who exercised an exclusive monopoly. There was then a fair (*feria*) at Xalapa, and the supply of a vast empire was there managed like that of a place under blockade. There was almost no competition; and the price of iron, steel, and all the other objects indispensable for the mines were raised at pleasure. The last fleet which arrived at Vera Cruz in the month of January, 1778, was commanded by the celebrated traveller, Don Antonio Ulloa. The following table

contains the value of the goods exported in that fleet, compared with the value of the exportation from Vera Cruz during the four years of 1787, 1788, 1789, and 1790, contained in the period designated by the denomination of *free trade.*

Exportation from New Spain by Vera Cruz, in the time of the fleets, and during the period of the free commerce.

Names of commodities.	Total exportation of the years 1787, 1788, 1789, and 1790.		Exportation by the fleet commanded by Ulloa in 1778.		Difference in favour of the free commerce between 1787 & 1790.	
	Quantities.	Value in double piastres.	Quantities.	Value in double piastres.	Quantities.	Value in double piastres.
Cochineal of the 1st quality	91,346 arrob.	7,764,469	26.400 arrob.	2,243,203	64,946 arrob.	5,521,266
2d quality	7,973 ditto	159,470	1,052 ditto	21,049	6,921 ditto	138,421
In dust	- -	- -	14 ditto	222	- -	- -
Vanilla	1,103,295 pieces	49,647	367,765 pieces	16,549	730,530 pieces	33,098
Medicaments	- -	- -	732 ditto	2,690	- -	- -
Roucou (Achiote)	- -	- -	95 ditto	380	- -	- -
Sugar	- -	- -	78 ditto	159	- -	- -
Cocoa	471 zurron.	37,536	157 zurron.	12,512	314 zurron.	25,024
Cotton	83,769 arrob.	83,769	173 arrob.	173	83,596 arrob.	83,596
Tanned hides	52,539 pieces	105,078	1,313 pieces	2,642	51,226 pieces	102,436
Cordwain	145,140 doz.	1,886,820	56 doz.	734	145,083 doz.	1,886,086
Rolls of Gum *(saucissons)*	200 ditto	50	1,000 ditto	250	- -	- -
Indico	6,386 arrob.	199,562	5,422 arrob.	169,459	964 arrob.	30,103
Campeachy wood	88,393 quint.	110,491	- -	- -	88,393 quint.	110,491
Pimento of Tabasco	18,832 ditto.	131,829	- -	- -	18,832 ditto.	131,829
Ox horns	693 doz.	693	- -	- -	693 doz.	693
Raw hides	70 ditto	105	- -	- -	70 ditto	105
Tanned sheep skins	103,057 ditto	618,345	- -	- -	103,057 ditto	618,345
Buffalo hides	57 ditto	570	- -	- -	57 ditto	570
Bear skins	43 ditto	172	- -	- -	43 ditto	172
Stag skins	94 ditto	282	- -	- -	94 ditto	282
Goat skins	59,000 ditto	44,250	- -	- -	59,000 ditto	44,250
Goat skins	200 ditto	112	- -	- -	200 ditto	112
Baquetes (hides)	7,224 ditto	25,284	- -	- -	7,224 ditto	25,284
Divers tanned hides	21,130 ditto	176,130	- -	- -	21,130 ditto	176,130
Total	- -	11,304,464	- -	2,470,092	- -	8,928,293

As the fleet of Don Antonio Ulloa was loaded with the produce of the Mexican agriculture from 1774 to 1778, we see from the preceding Table what a powerful influence the *free trade* had on the progress of industry. The value of the registered exportation amounted at an average before 1778 to 617,000 piastres annually; but during this period which commenced in 1787 and ended in 1790, the registered exportation amounted to 2,840,000 piastres.

Although the fleet of 1778, was the last which entered New Spain, that country however never fully enjoyed the privilege granted by the regulation of the 12th October, 1778, till 1786, when several commercial houses were established at Vera Cruz with success. The merchants who inhabit the towns of the interior, and who formerly supplied themselves with European goods at Mexico, have got into the habit of going directly to Vera Cruz for their purchases (*para emplear*). This change in the direction of commerce has been unfavourable to the interests of the inhabitants of the capital; but the increase which has been observable since the year 1778, in every branch of public revenue, sufficiently proves that what was hurtful to a few individuals, was useful to the national prosperity. The three following Tables were drawn up for the purpose of more completely illustrating this important truth.

37721

TABLE I.

Gross produce of the public revenue of New Spain.

Before the declaration of free trade.		After the declaration of free trade.	
Years.	Value in piastres.	Years.	Value in piastres.
1765	6,150,314	1778	15,277,054
1766	7,841,457	1779	15,544,574
1767	8,130,147	1780	15,010,974
1768	8,622,145	1781	18,091,639
1769	8,465,432	1782	19,594,490
1770	9,694,583	1783	19,579,718
1771	9,560,740	1784	19,605,574
1772	10,805,532	1785	18,770,056
1773	12,216,117	1786	16,826,416
1774	11,116,638	1787	17,983,448
1775	11,845,130	1788	18,573,561
1776	12,588,292	1789	19,044,840
1777	14,118,759	1790	19,400,213
Total	131,135,286	Total	233,302,557

	Piastres.
Total effect of the free trade on the gross revenue, during 13 years	102,167,271

TABLE II. (A.)

Value of the precious metals sent on account of the king, from Vera Cruz to Spain,

Before the declaration of free trade.		After the declaration of free trade.	
Years.	Value in piastres.	Years.	Value in piastres.
1766	90,387	1779	6,795
1767	2,923	1780	3,096,696
1768	623,855	1781	. . .
1769	. . .	1782	. . .
1770	1,858,784	1783	691,756
1771	922,306	1784	2,473,866
1772	. . .	1785	2,980,332
1773	3,114,046	1786	3,544,489
1774	. . .	1787	3,920,680
1775	1,903,649	1788	3,605,719
1776	1,724,907	1789	3,612,623
1777	2,542,086	1790	2,152,961
1778	2,244,129	1791	3,496,065
Total	15,027,072	Total	29,581,982

	Piastres.
Effect of free trade on the net revenue sent into Spain	14,554,910

(B.)

Amount of piastres sent on account of the king from Vera Cruz to Cadiz, and the West India Islands.

Destination.	Before the declaration of free trade.	After the declaration of free trade.	Total exportation on account of the public treasury.
Spain . . .	15,027,072	29,581,982	44,609,054
West India Islands *	36,259,508	78,846,695	115,106,203
Total .	51,286,580	108,428,677	159,715,257

* Under the denomination of *situados para las islas*, is comprehended the money sent to the Havannah, Louisiana, Porto Rico, and sometimes Caraccas, to support the expences of administration of these colonies, and the pay of the troops.

(C.)

Exportation of precious metals from Vera Cruz for the Havannah, Porto Rico, and Louisiana, both on account of the king (as situados) and on account of individuals.

Periods.	Value in piastres, before the declaration of free trade.		Periods.	Value in piastres, after the declaration of free trade.	
	On account of the king.	On account of individuals.		On account of the king.	On account of individuals.
1766	2,393,309	437,256	1779	5,463,220	499,193
1767	2,038,937	858,925	780	6,401,804	159,404
1768	2,391,969	832,216	1781	7,961,168	120,714
1769	2,628,613	626,175	1782	9,563,619	138,054
1770	1,667,102	923,815	1783	9,894,072	238,054
1771	2,774,053	320,113	1784	3,561,887	1,231,786
1772	2,809,054	141,948	1785	6,385,034	64 090
1773	2,641,028	340,620	1786	4,643,228	454,076
1774	3,115,206	792,686	1787	5,082,057	508,667
1775	3,089,043	625,895	1788	4,966,481	512,389
1776	3,300,927	423,599	1789	5,611,364	494,561
1777	3,681,746	701,007	1790	4,292,250	266,604
1778	3,728,521	521,822	1791	5,020,511	566,741
Total	36,259,508	7,546,077	Total	78,846,695	5,781,233

RESULTS.

Piastres exported from Vera Cruz to the Spanish Colonies.	From 1766 to 1778.	From 1779 to 1791.	Difference.
On account of the king and individuals.	43,805,585	84,627,928	40,822,343

TABLE III.

Amount of piastres exported from Vera Cruz into Spain, and the Spanish colonies, both on account of the king, and on account of individuals.

Destination.	Before the declaration of free trade, from 1766 to 1778.	After the declaration of free trade, from 1779 to 1791.
Spain on account of the king, according to Table II. (A)	15,027,072	29,581,982
Havannah, Porto Rico, and Louisiana, on account of the king, according to Table II. (C.)	36,259,508	78,846,695
Spain and the West India Islands on account of individuals.	103,873,984	115,623,348
Total	155,160,564	224,052,025

Let us now compare the actual produce of the mines of New Spain with the loss in specie experienced by that country from the unfavourable balance of its trade. Prepared by the information which we have been acquiring relative to the exportation of Vera Cruz and Acapulco, we shall be enabled to resolve the important question, whether the precious metals are accumulated in a region which contains the most abundant silver mines in the known world.

It was advanced in several memoirs presented to the court of Madrid, that in time of peace before the year 1796, the balance of trade of Vera Cruz was, deducting the contraband trade, as in the following table;

Importation.

	Piastres.
Importation from Spain - -	11,100,000
Importation from Spanish America	1,300,000
	12,400,000

Exportation.

	Piastres.
Produce of Mexican agriculture -	3,400,000
Precious metals - - - -	9,000,000
	12,400,000

This balance exhibits a state of exportation

apparently unfavourable for the kingdom of New Spain. If in the preceding table is included the specie exported on account of merchants, there is no reason for not adding the quantity of piastres annually sent on account of the government either to Europe or to the Spanish colonies. The amount of the exportation to the latter is at an average eight or nine millions of piastres. We have already seen, that between 1779 and 1791, the exportation of gold and silver from Mexico by the port of Vera Cruz on account of the king and individuals, amounted to more than two hundred and twenty-four millions of piastres, which is at an average equal to the sum of eighteen millions and a half per annum.

	Piastres.
We find in general that agreeable to the above tables from 1766 to 1791, the exportation of precious metals from the port of Vera Cruz amounted to - - - - -	379,000,000
The quantity of precious metals extracted from the mines of Mexico, during the same period amounted to. - - -	460,000,000
Difference - - - -	81,000,000

It appears then from these data, that during a period of twenty-five years, the annual accumulation of specie has not exceeded the sum

of a million of piastres; for though the consumption of objects of luxury before the year 1778 was considerably less than at present, it would be difficult to avoid estimating the value of the contraband trade at two millions and a half of piastres, of which a great part is paid in hard cash.

The state of the commerce of New Spain has changed very much within these twelve or fifteen years. The quantity of foreign goods imported fraudulently into the east and west coasts of Mexico, has increased not in volume but in intrinsic value. A greater number of vessels are not employed in the *smuggling trade* with Jamaica, but the objects of importation have changed with the increase of luxury and national wealth. Mexico now requires finer cloths, a greater quantity of muslins, gauzes, silks, wines, and liquors than previous to 1791. Although the value of the contraband trade is estimated at four or five millions of piastres per annum, we must not conclude that an equal sum of *unregistered* piastres flows into Asia and the English West India Islands. Part of this fraudulent importation is exchanged for the produce of Mexican or Peruvian agriculture; and another part is paid for either in America, Cadiz, Malaga, or Barcelona.

If on the one hand the increase of luxury has

rendered Mexico within the last fifteen or twenty years more dependent on Europe and Asia than formerly, on the other hand the produce of the mines has considerably increased. According to the accounts of the consulado, the importation of Vera Cruz, calculating only from the registers of the customs, amounted before 1791 to eleven millions of piastres; and it now amounts at an average, to more than fourteen millions annually. In the ten years preceding 1791, the mean produce of the mines of New Spain* amounted to 19,300,000 piastres per annum, while from 1791 to 1801 the produce amounted to 23 millions of piastres annually. In this last period the indigenous manufactures have been exceedingly prosperous; but at the same time as the Indians and people of colour are better clothed, this progress of the Mexican manufactures has had no sensible effect on the importation of Europe—cloth, Indian cottons, and other goods of foreign manufacture. The produce of agriculture has increased in a greater proportion than the manufacturing industry. We have already seen the zeal with which the inhabitants of Mexico gave themselves up to the cultivation of the sugar cane. The quantity of sugar exported at Vera Cruz now amounts

* See vol. iii. chap. xi. p. 294.

to six millions of kilogrammes; and in a few years the value of this commodity will equal that of the cochineal of the intendancy of Oaxaca.

Bringing together into one point of view the data collected by me respecting the trade of Acapulco and Vera Cruz, we find that in the beginning of the nineteenth century,

The *importation* of foreign goods and produce into the kingdom of New Spain, including the contraband on the eastern and western coasts, amounts to *twenty millions of piastres**.

The *exportation* from New Spain of the produce of its agriculture and manufacturing industry amounts to *six millions of piastres*†.

Now the mines produce *twenty-three millions of piastres*, of which from *eight* to *nine* are exported on account of the king, either for Spain, or the other Spanish colonies: consequently if we deduct from the *fifteen millions* of piastres remaining, *fourteen millions* to liquidate the excess of the importation over the exportation, we find hardly a *million* of piastres. The national wealth or rather the specie of Mexico is then annually on the increase.

* £4,200,000 sterling. *Trans.*

† £1,260,000 sterling. *Trans.*

This calculation founded on exact data explains the reason why the country, whose mines are the richest and most constant in their produce, does not possess a great mass of specie, and why the price of labour still remains very low there. Enormous sums are accumulated in the hands of a few individuals*, but the indigence of the people cannot help striking those Europeans who travel through the country and the towns of the interior of Mexico. I am tempted to believe that of the ninety-one millions of piastres† which we have supposed to exist in specie among the thirteen or fourteen millions of inhabitants of the Spanish Colonies of continental America, nearly fifty-five or sixty millions are in Mexico. Although the population of this kingdom is not altogether in the proportion of one to two to the population of the other continental colonies, its national wealth is to that of the other colonies nearly in the proportion of two to three. The estimate of sixty millions of piastres gives only ten piastres per head; but this sum must appear too great when we reflect, that in Spain seven piastres, and in France fourteen piastres are allowed for each inhabitant. In the Capitania general of Cara-

* See vol. i. chap. vii.

† See vol. iii. p. 430.

cas, in 1801, the specie which circulates among a population of between seven and eight hundred thousand inhabitants was calculated at three millions of piastres*; but then what a difference between an empire rich in mines like Mexico, and another which is entirely destitute of them, and where the exports scarcely equal the value of the importation! Several writers on political economy suppose that the specie of a country is generally in the proportion of four to one to its gross revenue. Now the revenue of the kingdom of New Spain, deducting what the government draws from the mines amounts to 16 millions of piastres. From this datum the mass of the specie would be sixty-four millions, which differs very little from our first estimate. We have already seen that the ministry of Spain have not always had the most accurate ideas respecting the national wealth of Mexico. Occupied in 1804 with the project of paying off the *vales* or *public debt*, the mother country imagined it possible to draw at once from New Spain, a sum of forty-four millions and a half of piastres belonging to ecclesiastical corporations†. It was easy however, to foresee that the proprietors in whose hands this sum was placed, and who

* *Depons*, T. i. p. 178; and T. ii. p. 380.

† See vol. iii. p. 100.

have usefully employed it in the amelioratio of their lands, would not be in a condition to restore it in specie; and hence this operation of the government completely failed.

It is not to be denied that since the last war which broke out between Spain and France in 1793, Mexico has suffered from time to time great losses in specie. Besides the *situados*, the net revenue of the king and the property of individuals, several millions have annually passed into Europe, as *gratuitous* gifts for the maintenance of a war, considered by the lower people as a war of religion. These contributions were not always the effect of the enthusiasm produced by the sermons of the monks and the proclamations of the viceroys; for frequently the authority of the magistrates was interposed to compel the different townships to offer the *voluntary gift*, and to prescribe the amount of it. In 1797, long after the peace of Bâle, an extraordinary loan was opened at Mexico, of which the produce amounted to seventeen millions of piastres. This large sum was sent to Madrid, and the *revenue of the royal farm (renta de tabaco)* which generally yields a produce of three millions and a half of piastres, was assigned as a hypothec to the Mexican creditors. These facts are sufficient to show that the exportation of specie by the ports of Vera Cruz and Acapulco sometimes

exceed the produce of the coinage, and that the operations of the ministry of Spain latterly have contributed to impoverish Mexico.

In fact this diminution of specie would soon be severely felt, if for several successive years the mint of Mexico should furnish fewer piastres, either on account of bad management of the mines, which are now most abundant, or a diminution in the quantity of mercury necessary for the amalgamation works. The position of a population of five or six millions of inhabitants, who from an unfavourable balance of trade should experience an annual diminution of their capital of more than fourteen millions of piastres, would be very critical, if ever they were deprived of their metallic wealth; for at present twenty millions of piastres worth of goods imported into Mexico, are exchanged for six millions of piastres in produce of Mexican agriculture, and fourteen millions of piastres in specie, which may be considered as drawn from the bowels of the earth.

On the other hand, had the kings of Spain governed Mexico by princes of their house residing in the country, or if in consequence of those events of which we have examples in the history of every age, the colonies had separated from the mother country, Mexico would have lost nine millions of specie less annually, which were partly paid into the

royal treasury of Madrid, and partly under the improper denomination of *situados* paid in to the provincial treasuries of the Havannah, Porto Rico, Pensacola, and Manilla. By allowing a free course to the national industry, by encouraging agriculture and manufactures the importation will diminish of itself; and it will then be easy for the Mexicans to pay the value of foreign commodities with the productions of their own soil. The free cultivation of the vine and the olive on the table land of New Spain; the free distillation of spirits from rum, rice, and the grape; the exportation of flour favoured by the making of new roads; the increase of plantations of sugar cane, cotton, and tobacco; the working of the iron and mercury mines; and the manufacture of steel, will perhaps one day become more inexhaustible sources of wealth, than all the veins of gold and silver united. Under more favourable external circumstances, the balance of trade may be favourable to New Spain, without paying the account which has been opened for centuries between the two continents entirely with Mexican piastres.

In the present state of the trade of Vera Cruz and Acapulco, the total value of exported agricultural produce, scarcely equals the value of the sugar furnished by the island of Cuba, which amounts to 7,520,000 piastres, admitting

only an exportation of 188 chests of sugar, of 16 arrobas each, and valuing the price of the chest of sugar at forty piastres. But the importation of Mexico which we calculate on an average at *twenty millions of piastres* annually, si an object of the very highest importance for the commercial nations of Europe, who want an outlet for their manufactures. We shall call to mind on this occasion, 1st. That the United States of North America, of which the exportation in 1802* amounted to 71,957,144 *dollars*, exported in 1791 only to the value of 19,000,000 dollars; 2nd. That England at the period of the greatest activity of its trade with France in 1790, only imported into that country goods to the value of 5,700,000 piastres; and 3rd. That the exportation from England for Portugal and Germany in 1790 did not exceed, the former 7,600,000 piastres, and the latter 12,400,000 piastres†. These data are sufficient to explain, why towards the end of the last century Great Britain made so many efforts to procure a share of the trade between the Peninsula and Mexico.

In classing the ports of Spanish America according to the importance of their trade, Vera Cruz and the Havanah occupy the first rank.

* See note G. at the end of this volume.

† *Playfair, commercial atlas*, 1801. Pl. v. viii. and x.

An enormous mass of business was transacted there during the last war, in the short space of time when the entry of neutral vessels into the colonies was permitted by the court of Madrid. We may range the other ports in the following order: Lima, Carthagena, Buenos-Ayres, la Guayra, Guayaquil, Porto Rico, Cumana, Santa Marta, Panama, and Portobello.

To enable the reader to judge of the *relative activity* of the trade of the Spanish colonies of America, I shall succinctly specify the value of the exports and imports of several of the above ports. My object is merely to furnish here such general results as may be interesting to political economy and the science of trade. All the minute details are reserved for the notes, which will accompany the historical account of my travels to the equinoctial regions.

Vera Cruz. Importation, 15 millions of piastres. Exportation (not including the precious metals) five millions of piastres.

Havanah. Exportation in native produce, eight millions of piastres, of which 31,600,000 kilogrammes* or 6,320,000 piastres in sugar (valuing the chest of sugar at 40 piastres); 525,000 kilogrammes† or 720,000 piastres in wax (the arroba at 18 piastres); 625,000 kilo-

* 69,678,000 lb. avoird. *Trans.*

† 1,157,625 lb. avoird. *Trans.*

grammes* or 250,000 piastres in coffee, (the arroba at five piastres). The exportation of sugar which was next to nothing before 1760, amounted in 1792 to 14,600,000 kilogrammes; in 1796 to 24 millions of kilogrammes; and from 1799 to 1803 at an average to 33,200,000 kilogrammes annually. In 1802, the harvest of sugar was so abundant, that the exportation rose to 40,880,000 kilogrammes†; so that this branch of trade has been almost tripled in ten years. The customs of the Havanah amounted between 1799 and 1803 at an average to 2,047,000 piastres annually; and in 1802 they exceeded 2,400,000 piastres. The total amount of the trade of the Havanah is 20 millions of piastres.

Lima. Importation, five millions of piastres. Exportation, (including the precious metals) seven million of piastres.

Carthagena, including the small adjoining ports of Rio Hacha, Santa Marta, and Portobello, connected together by the most intimate commercial relations. Exportation of the produce of native agriculture, without including the precious metals, 1,200,000 piastres, whereof 1,500,000 kilogrammes of cotton, 100,000 kilogrammes of sugar, 10,000 kilogrammes of

* 1,378,125 lb. avoird. *Trans.*

† 90,140,400 lb. avoird. *Trans.*

indigo, 400,000 kilogrammes of Brazil wood, 100,000 kilogrammes of quinquina of New Grenada, 1000 kilogrammes of balm of Tolu, and 6000 kilogrammes of ipecacuana*. Importation, four millions of piastres.

La Guayra, the principal port of the province of Caracas. From 1796 to 1800†, the exportation amounted at an average to 1,600,000 piastres annually, of which 2,985,000 kilogrammes of cocoa, 99,000 kilogrammes of indigo, 354,000 kilogrammes of cotton and 192,000 kilogrammes of coffee. But from 1789 to 1796 the importation might have been taken at an average of 2,362,000 piastres annually‡; and the exportation in native produce at 2,739,000 piastres, of which 4,775,000 kilogrammes of cocoa, 386,000 kilogrammes of indigo, 204,000 kilogrammes of cotton, 166,000 kilogrammes of coffee, and 73,000 hides.

Guayaquil. Exportation in native produce

* *La Raicilla* or ipecacuana, which comes into Europe through the Spanish ports and through the contraband trade of Jamaica, is the root of the *Psychotria emetica*, and not of the *Calicocca* of Brotero, or the *Viola emetica* of Mutis, as some botanists have advanced. This Psychotria was examined by M. Bonpland and myself, on ascending the river Magdalen near Badillas. We must not confound the Spanish with the Brazilian ipecacuana.

† Depons, ii. p. 439.

‡ According to the official papers which I shall publish in the first volume of the historical account of my travels.

550,000 piastres, whereof three millions of kilogrammes of cocoa. Importation, 1,200,000 piastres.

Cumana, (including the small adjoining port of Nueva Barcelona). Importation, one million of piastres. Exportation 1,200,000 piastres, whereof 1,100,000 kilogrammes of cocoa, 500,000 kilogrammes of cotton, 6000 mules, 1,200,000 kilogrammes of *Tasajo* or salt meat.

These valuations are founded on information procured by me in the course of my travels in America. The *Balances* were struck from the declarations at the customs; and no account is taken of the contraband except in the table of the commerce of Carthagena and Cumana. The whole of these data will enable us to take a general view of the balance of trade of the whole of Spanish America. It is only by comparing the commerce of Mexico with that of the other colonies, that we can be enabled to judge of the political importance of the country which I have endeavoured to make known in this work. I begin first with collecting into one table what the Spanish custom-house books contain, respecting the balance of trade between the mother country and the colonies before and after the famous regulation of 1778.

Periods.	Value of the exportation from Spanish America into Spain, (in piastres.)			Value of the importation from Spain into Spanish America, (in piastres).		
	Agricultural produce.	Precious metals.	Total exportation.	National goods.	Foreign goods.	Total importation.
Average year from 1748 to 1753 - -	4,955,000	18,060,000	23,015,000	4,939,000	7,076,000	11,115,000
1778	3,728,000	unknown	unknown	1,431,000	2,314,000	3,745,000
1784	16,720,000	46,456,000	63,176,000	9,799,000	11,941,000	21,740,000
1785	19,415,000	43,888,000	63,303,000	16,863,000	21,499,000	38,362,000
1788	unknown	unknown	40,234,000	7,900,000	7,120,000	15,020,000

We are struck in this table* with the want of agreement between the partial data. The year 1778 and 1788 differ the most from those which immediately precede them, and yet these two years, in which trade does not appear to have followed its natural course, are cited by all the authors who treat of the beneficent influence of the regulation of the Count de Galvez on the progress of the national industry and prosperity of the colonies. The years 1784 and 1785 exhibit examples of an extraordinary commercial activity, because after the peace of Versailles, the productions of the colonies, which had been accumulating during the war, flowed all at once into Europe. The peace of Amiens recently exhibited a similar but still more remarkable phenomenon. In 1802 the port of Cadiz alone† received from the

* The result in this table for the five years preceding 1753 differs from that given by Raynal (vol. ii. liv. vi.), because that celebrated author did not enter into the account, the importations and exportations of the Spanish West India Islands. The balance of 1778 is taken from the *Tableau de l'Espagne* of *M. Bourgoing*, T. ii. p. 230. For 1784 and 1785 see *Demeunier, Encycl. method., art. Espagne*, p. 322. The imports and exports of 1784 are specified in the work of Page, T. i. p. 115, and 300. The exports from the ports of Spain to the colonies in national goods, were valued in 1789 at 7,220,000 piastres; in 1790 at 5,100,000 piastres; in 1791 at 5,800,000 piastres; and in 1792 at 13,500,000 piastres. (*Laborde*, T. iv. p. 383.)

† Cadiz in 1802 received 54,742,033 piastres in gold

different ports of America in colonial produce and precious metals the value of 409,000,000 livres tournois* a sum equal to the total importation of England† in 1790.

The tables which go by the deceitful denomination of *balance of trade*, convey no useful information, except when they contain averages of a great number of years. In this point of view the first result in the preceding table appears preferable to the rest; and this result would even be of great importance for the history of American trade, if we were sure of the accuracy of an operation executed in the custom-house of Cadiz from the registers of six years between 1748 and 1753.

The produce of the mines which annually flows into Europe, and which is included in the objects of exportation from the colonies, may be divided into three portions; the first which is extremely small belongs to American colonists settled in Spain; the second from eight to nine millions of piastres, enters the royal treasury, as the net revenue of all the American colonies;

and silver both coined and in ingots, and colonial produce to the value of 27,096,814 piastres.

* £16,693,874 sterling. *Trans.*

† Commerce of England with all parts of the world, according to accounts laid before Parliament; Importation in 1790 18 millions sterling; in 1800 28 millions: exportation in 1790, 22 millions sterling; in 1800 34 millions.

and the third which is the most considerable, serves to pay the excess of the importations from Europe into the Spanish colonies. When we are informed that in 1785, America sent into Spain precious metals and agricultural produce (*en plata y frutos*), to the amount of 63 millions of piastres, and that she only received goods in return to the value of 38 millions of piastres, we might be tempted to conclude that the net revenue of the king and the revenues of Spanish families possessing estates in the New Continent amount to 25 millions of piastres per annum. Nothing, however, would be more false than such a conclusion; for the metallic wealth of the colonies not only serves to pay the debt contracted in Spain for the importation of European and Asiatic goods, which have been registered in that country, but it serves also to pay either at Cadiz or Barcelona English draughts for the balance of goods smuggled from Jamaica and Trinidad into the coasts of Mexico, Caracas, and New Grenada.

In general the registers of Spanish customs throw very little light on the great problem: what is the value of the goods and commodities of Europe and Asia, annually wanted by the Spanish colonies in the present state of civilization? To throw light on this discussion, it is more important to know the extent of the

wants of America than to know accurately what active share the mother country has hitherto had in supplying the colonies. Besides the denomination of *national goods* which we find used in all the commercial tables of Spain, merely indicates that the merchants have succeeded in passing such or such a quantity of goods at the custom-house for the produce of the agriculture or manufactures of the Peninsula. The Spanish industry has made considerable progress in late years; but it would be a gross error to judge of the rapidity of that progress from the custom-house books.

To know as nearly as possible the value of the importations of Spanish America, I endeavoured to inform myself on the spot in each province, of the state of commerce of the principal ports; I procured information relative to the goods registered, and those which were smuggled; and I turned in a particular manner my attention to those years, when, either from a free trade with *neutrals*, or from the sale of *prizes*, a province was glutted with European and East India commodities. After discussing with many intelligent merchants the tables of commerce which I have given above, and of which the most were formed under the care of the *consulados*, I deemed myself warranted in fixing on the following numbers, which seem to me to approach the nearest to the truth.

Importation and Exportation of the Spanish Colonies of the New Continent.

Political divisions.	Importation from Europe and Asia including contraband.	Exportation from the colonies.		Remarks on the consumption.
		Value of agricultural produce.	Value of the produce of the gold and silver mines.	
Capitania general of the Havannah and Porto Rico	11,000,000	9,000,000	- -	In the Island of Cuba the free population 324,000 of whom 234,000 whites. The free people of colour consume more than in Mexico. No Indians.
Viceroyalty of New Spain and Capitania general of Guatimala.	22,000,000	9,000,000	22,500,000	Total population 7,800,000. In New Spain 3,337,000 whites and mixed casts. The number of natives or Indians who consume few or no foreign commodities amounts to 2½ millions; that of the whites alone to 1,100,000.
Carried over -	33,000,000	18,000,000	22,500,000	

Political divisions.	Importation from Europe and Asia including contraband.	Exportation from the colonies. Value of agricultural produce.	Exportation from the colonies. Value of the produce of the gold and silver mines.	Remarks on the consumption.
Brought over - -	33,000,000	18,000,000	22,500,000	
Viceroyalty of New Grenada.	5,700,000	2,000,000	3,000,000	Population, 1,800,000. In 1778 on an exact enumeration there was found 747,641 in the audience of Santa Fe and 531,799 in the audience of Quito, in all 1,279,440 individuals.
Capitania general de Caracas.	5,500,000	4,000,000	- -	Total population of the seven provinces of Caracas, Maracaybo, Varinas, Coro, New Andalusia, New Barcelona, and Guayana, 900,000, of whom 54,000 slaves.
Viceroyalty of Peru and Capitania general of Chili.	11,500,000	4,000,000	8,000,000	Population 1,800,000. In Peru alone the enumeration gave in 1791, 130,000 whites and 240,000 mestizoes, who consume a great deal when they enjoy a certain degree of ease of circumstances. In Chili there are many whites but they live in a stile of great simplicity.
Viceroyalty of Buenos-Ayres.	3,500,000	2,000,000	5,000,000	I have never yet been able to procure any satisfactory information respecting the population of this viceroyalty which is very considerable in the western provinces called the *Provincias de la Sierra*.
Total in piastres.	59,200,000	30,000,000	38,500,000	Total of exportation in agricultural produce and gold and silver, 69 millions of piastres.

The estimates of population in this table are founded on my own researches *.

The same Table demonstrates that if Asia took no share in the commerce of America, the manufacturing nations of Europe would actually have an annual sale of goods in the Spanish colonies, to the value of 310,000,000 livres tournosi, or 59,200,000 piastres †. This enormous importation is only balanced by 160,000,000 livres ‡, or thirty millions and a

* I am surprised to see that an estimable, and in other respects very accurate author, M. Depons, has advanced, that in 1802, the *capitania general* of Caracas, contained 218,400 blacks, (*Voyage à la Terre Ferme*, T. i. p. 178 and 241.) He assumes this number, because in the beginning of his work he supposes the slaves to constitute *three tenths* of the whole population, which he estimates at 728,000 souls. How could M. Depons who resided several years in that fine country, admit one negro for every three inhabitants? Even the Island of Cuba, in 1803, had not the half of the number of slaves which this author supposes in the *capitania general* of Caracas. I mean to prove in another place, that in the province of Venezuela, the number of black slaves and mulattoes does not exceed one fourteenth of the whole population. It will be of importance to enter minutely into the discussion of this fact, because it is interesting to the prosperity and political tranquillity of the colonies.

† £12,432,000 sterling. *Trans.*

‡ In comparing the exports of Spanish and foreign goods, valued according to the custom-house books of Spain, with the imports of these same goods valued in the ports of

half of piastres, the value of the produce of the colonial agriculture. The excess of the importation, which amounts to 150,675,000 livres, or 28,700,000 piastres, is paid in gold, and silver extracted from the mines of America. Now we know from what has been already related, that the value of the precious metals which annually flow from America into Europe amounts to 38 millions and a half of piastres, or 202,125,000 livres; and if we deduct from this sum the 28,700,000 piastres destined to pay the excess of the importations over the exportations, there remain 9,800,000 piastres, or 51,450,000 livres, which are nearly equivalent to the rents of the American proprietors resident in the Peninsula, joined to the quantity of gold and silver which annually enters into the treasury of the king of Spain as *net revenue of the colonies.* From the whole of these premises we may draw the following conclusion, of which the knowledge is very important for political economy; that in the beginning of the 19th century, the value of the imports of Spa-

America, we must not forget that the latter exceed the former, 1st. Because the goods arrived in America have paid the export duties in Spain, 2dly. Because their price is increased by the freight, the difference of the currency, and the duties on entry. These considerations have been neglected by several authors, and by uniting numbers not comparable with one another, they have obtained contradictory results.

nish America is almost equal to the produce of the mines, when we retrench the value of colonial agricultural exports, the piastres which enter into the royal treasury at Madrid, and the inconsiderable sums which the colonists resident in Europe draw from America.

When we examine on this principle the *accounts* of importation of gold and silver into Spain, and compare them with the produce of the mints of America, we may easily perceive how much the greatest number of authors who have treated of the Spanish commerce, have exaggerated the amount of the English contraband trade, and the profits of the Jamaica merchants. We read in works of great circulation, that the English before 1765, gained by the contraband trade more than twenty millions of piastres per annum; when we add this sum to the quantity of gold and silver registered at Cadiz, as arriving from the colonies, either on account of the king, or in payment of Spanish goods, we find a mass of silver which very much exceeds the real produce of the mines. Notwithstanding the contraband which is carried on on the coast of Caracas, since the English have got possession of the islands of Trinidad and Curaçao, it appears that the fraudulent importation of goods in all Spanish America has not amounted during the last years of peace to more than a fourth part of the whole importation.

It remains for us to speak at the end of this chapter of the epidemical disease which prevails on the eastern coast of New Spain, and which during a great part of the year is an obstacle not only to European commerce, but also to the interior communications between the shore and the table land of Anahuac. The port of Vera Cruz is considered as the principal seat of the *yellow fever* (*vomito prieto*, or *negro*). Thousands of Europeans landing in Mexico at the period of the great heats fall victims to this cruel epidemic. Some vessels prefer landing at Vera Cruz in the beginning of winter when the tempests *de los nortes* begin to rage, to the exposing themselves in summer to lose the greater part of their crew from the effects of the *vomito*, and to undergo a long quarantine on their return to Europe. These circumstances have frequently a very sensible influence on the supply of Mexico and the price of commodities. This destructive scourge produces still more serious effects on the interior commerce. The mines are in want of iron, steel, and mercury, whenever the communication is interrupted between Xalapa and Vera Cruz. We have already seen that the commerce between province and province is carried on by caravans of mules; and the muleteers as well as the merchants who inhabit the cold and temperate regions of the interior of New Spain are afraid of descending

towards the coast, so long as the vomito prevails at Vera Cruz.

In proportion as the commerce of this port has increased, and Mexico has felt the want of a more active communication with Europe, the disadvantages arising from the insalubrity of the air on the coast, have been also more gravely felt. The epidemic which prevailed in 1801 and 1802, gave rise to a political question which was not agitated with the same vivacity in 1762, or in former periods, when the yellow fever committed still more dreadful ravages. Memoirs were presented to the government for the discussion of the problem, whether it would be better to rase the town of Vera Cruz, and compel the inhabitants to settle at Xalapa, or some other point of the Cordillera, or to try some new means of rendering the port more healthy. This last resolution would merit a preference, the fortifications having cost more than fifty millions of piastres, and the port, however bad, being the only one which on the eastern coast can afford any shelter to vessels of war. Two parties have arisen in the country, of which the one desires the destruction, and the other the aggrandizement of Vera Cruz. Although the government appeared for some time to incline to the first of these parties, it is probable that this great process, in which the property of sixteen thousand individuals, and the

fortune of a great number of powerful families, from their wealth, is at stake, will be by turns suspended and renewed without ever coming to a termination. At my passing through Vera Cruz, I saw the *cabildo* undertake to build a new theatre, while at Mexico the assessor of the viceroy was composing a long *informe*, to prove the necessity of destroying the town, as being the seat of a pestilential disease.

We have seen that in New Spain, as well as in the United States, the yellow fever not only attacks the health of the inhabitants, but also undermines their fortunes, either from the stagnation of interior trade, which it occasions, or by the obstacles which it throws in the way of foreign commerce. Hence, whatever relates to this disease, interests the statesman as well as the observing naturalist. The insalubrity of the coast, which fetters commerce, facilitates in other respects the military defence of the country against the invasion of a European enemy; and to complete the political view of New Spain, it remains for us to examine the nature of the malady which renders the stay at Vera Cruz so formidable to the inhabitants of the cold and temperate regions. I shall not here enter into the details of a nosographical description of the *vomito prieto*. A great number of observations which I collected during my residence in the two hemispheres, is reserved

for the historical account of my travels; and I shall confine myself here to an indication of the most remarkable facts, distinguishing carefully the incontestible results of observation, from whatever belongs to physiological conjecture.

The *typhus*, which the Spaniards designate by the name of black vomiting (*vomito prieto*) has long prevailed between the mouth of the Rio Antigua and the present port of Vera Cruz. The Abbe Clavigero * and some other writers, affirm that this disease appeared for the first time in 1725. We know not on what this assertion, which is so contrary to the traditions preserved among the inhabitants of Vera Cruz, is founded. No antient document informs us of the first appearance of this scourge; for throughout all the warmer part of equinoctial America, where the *termites* and other destructive insects abound, it is infinitely rare to find papers which go fifty or sixty years back. It is believed however at Mexico as well as Vera Cruz, that the old town, now merely a village, known by the name of *La Antigua*, was abandoned towards the end of the 16th century †, on account of the disease which then carried off the Europeans.

Long before the arrival of Cortez, there has

* *Storia de Messico*, T. i. p. 117.

† See Vol. II. p. 253.

almost periodically prevailed in New Spain, an epidemical disease, called by the natives *matlazahuatl*, which several authors * have confounded with the *vomito*, or yellow fever. This plague is probably the same as that which in the eleventh century, forced the Toltecs to continue their emigrations southwards. It made great ravages among the Mexicans in 1545, 1576, 1736, 1737, 1761 and 1762; but as we have already observed †, it differs essentially from the *vomito* of Vera Cruz. It attacked few except the Indians or copper-coloured race, and raged in the interior of the country on the central table land at twelve or thirteen hundred toises above the level of the sea. It is true, no doubt, that the Indians of the valley of Mexico, who perished by thousands in 1761, of the *matlazahuatl*, vomited blood at the nose and mouth; but these *hematemeses* frequently occur under the tropics, accompanying bilious ataxical *(ataxiques)* fevers; and they were also observed in the epidemical disease, which in 1759 prevailed over all South America, from Potosi and Oruro, to Quito and Popayan, and which from the incomplete description of Ulloa ‡ was a *typhus* peculiar to the elevated regions of the Cordilleras. The physicians of the United

* Letter of Alzate in the *Voyage de Chappe*.

† See Vol. I. p. 117.

‡ *Noticias Americanas*, p. 200.

States who adopt the opinion that the yellow fever originated in the country itself, think they discover the disease in the *pests* which prevailed in 1535 and 1612 * among the red men of Canada and New England. From the little which we know of the *matlazahuatl* of the Mexicans, we might be inclined to believe, that in both Americas from the remotest periods, the copper-coloured race has been subject to a disease, which in its complications resembles in several respects the yellow fever of Vera Cruz and Philadelphia, but which differs essentially from it by the facility with which it is propagated in a cold zone, where the thermometer during the day remains at ten or twelve centigrade degrees †.

It is certain that the *vomito*, which is endemical at Vera Cruz, Carthagena, and the Havannah, is the same disease with the yellow fever, which since the year 1793, has never ceased to afflict the inhabitants of the United States. This identity, against which a very small number of physicians in Europe have

* *Stubbins Ffirth on malignant fever*, 1804, p. 12. Gookin relates the remarkable fact that in the *pest* which prevailed in 1612 among the Pawkunnawhutts, near New Plymouth, the skin of the infected Indians was of a yellow hue.

† 50° and 53° of Fahrenheit. *Trans.*

started doubts * is generally acknowledged by those of the faculty who have visited the island of Cuba and Vera Cruz, as well as the coast of the United States, and by those who have carefully studied the excellent nosological descriptions of MM. Makittrick, Rush, Valentin, and Luzuriaga. We shall not decide whether the yellow fever is perceptible in the *causus* of Hipocrates, which is followed, like several remittent bilious fevers, by a vomiting of black matter; but we think that the yellow fever has been sporadical in the two continents, since men born under a cold zone, have exposed themselves in the low regions of the torrid zone, to an air infected with miasmata. Wherever the exciting causes, and the irritability of the organs are the same, the disorders which originate from a disorder in the vital functions ought to assume the same appearances.

It is not to be wondered at, that, at a period when the communications between the Old and New Continent, were far from numerous, and when the number of Europeans who annually frequented the West India Islands, was still smaller, a disease which only attacks the individuals who are not seasoned to the climate, should have very little engaged the attention of the physicians of Europe. In the 16th and

* *Arejula, de la fiebre amarilla de Cadiz*, T. i. p. 143.

17th centnry, the mortality must not have been so great; 1st. Because at that period the equinoctial regions of America were only visited by Spaniards and Portuguese, two nations of the south of Europe, less exposed from their constitution, to feel the fatal effects of an excessively hot climate, than the English, Danes, and other inhabitants of the north of Europe, who now frequent the West India Islands; 2dly. Because in the Islands of Cuba, Jamaica, and Haity, the first colonists were not assembled together in such populous cities as were afterwards built; 3dly. Because on the discovery of continental America, the Spaniards were less attracted by commerce towards the shore which is generally warm and humid, and preferred a residence in the interior of the country on *elevated table* lands, where they found a temperature analogous to that of their native country. In fact, at the commencement of the conquest, the ports of Panama and Nombre de Dios *, were the only ones where there was a great concourse of strangers; but from 1535 the residence at Panama † was as much dreaded by the Europeans as in our times a residence at Vera Cruz, Omoa, or Porto Cabello. It cannot be denied, from the facts related by

* Nombre de Dios, situated to the east of Porto Bello, was abandoned in 1584.

† *Pedro de Cieça*, c. 2. p. 5.

Sydenham and other excellent observers, that under certain circumstances germs of new diseases may be developed *; but there is nothing to prove that the yellow fever has not existed for several centuries in the equinoctial regions. We must not confound the period at which a disease has been first described, on account of its having committed dreadful ravages in a short space of time, with the period of its first appearance.

The oldest description of the yellow fever, is that of the Portugueze physician Joam Ferreyra da Rosa †, who observed the epidemic which prevailed at Olinda in Brazil, between 1687 and 1694, shortly after a Portugueze army had made the conquest of Pernambuco. We know in the same manner with certainty, that in 1691 the yellow fever manifested itself at the island of Barbadoes, where it went by the name of *kendal fever*, without the smallest proof appearing that it was brought there by vessels from Pernambuco. Ulloa ‡, speaking of the *chapetonadas*, or fevers to which Europeans are exposed on their arrival in the West Indies,

* See, respecting an affection of the larynx, which prevails epidemically at Otaheite, since the arrival of a Spanish vessel, *Vancouver*, T. i. p. 175.

† *Trattado da constituiçam pestilencial de Pernambuco, por Joam Ferreyra da Rosa, em Lisboa*, 1694.

‡ *Voyage*, T. i. p. 41 and 149.

relates that according to the opinion of the people of the country, the *vomito prieto* was unknown at Saint Martha and Carthagena before 1729 and 1730, and at Carthagena previous to 1740. The first epidemic of Saint Martha was described by Juan Josef de Gastelbondo* a Spanish physician. Since that period the yellow fever has several times raged out of the West India Islands and Spanish America, on the Senegal, in the United States†, at Malaga, Cadiz‡, Leghorn, and according to the excellent work of Cleghorn, even in the Island of Minorca§. We have thought it proper to relate these facts, many of which are not generally known, because they throw some light on the nature and cause of this cruel disease. The opinion that the epidemics which since 1793 have nearly every year afflicted North America, differ essentially from those which for centuries have prevailed at Vera Cruz, and that the yellow fever was imported from the coast of Africa into Grenada, and from thence into Philadelphia is equally destitute of foundation with the hypothesis formerly very

* *Luzuriaga de la calentura biliosa*, T. i. p. 7.

† In 1741, 1747, 1762.

‡ At Cadiz in 1731, 1733, 1734, 1744, 1746, 1764, and at Malaga in 1741.

§ In 1744, 1749.—(*Tommasini sulla febbre de Livorno del* 1804, p. 65.)

generally believed, that a squadron from Siam introduced the *vomito* into America*.

In all climates men appear to find some consolation in the idea that a disease considered as pestilential is of foreign origin. As malignant fevers easily originate in a numerous crew cooped up in dirty vessels, the beginning of an epidemic may be frequently traced to the period of the arrival of a squadron; and then instead of attributing the disease to the vitiated air contained in vessels deprived of ventilation, or to the effects of an ardent and unhealthy climate on sailors newly landed, they affirm, that it was imported from a neighbouring port, where a squadron or convoy touched at, during its navigation from Europe to America. Thus we frequently hear in Mexico, that the ship of war which brought such or such a viceroy to Vera Cruz, has introduced the yellow fever, which for several years had not prevailed there; and in this manner during the season of great heat, the Havannah, Vera Cruz, and the ports of the United States mutually accuse one another of communicating the germ of the contagion. It is with the yellow fever as with

* *Labat's Voyage aux Isles*, T. i. p. 73. Respecting the plague of Boullam in Africa, see *Chisholm* on *Pestilential Fever*, p. 61; *Miller*, *Histoire de la fievre de New Yorck*, p. 61; and *Volney*, *Tableau du Sol de l'Amerique*, T. ii. p. 334.

the mortal *typhus*, known by the name of oriental pest, which the inhabitants of Egypt attribute to the arrival of Greek vessels, while in Greece and Constantinople, the same pest is considered as coming from Rosetta or Alexandria *.

Pringle, Lind, and other distinguished physicians consider our summer and autumnal bilious affections, as the first degree of yellow fever †. A feeble analogy is also discoverable in the pernicious intermittent fevers which prevail in Italy, and which have been described by Lancisi Torti, and recently by the celebrated Franck ‡ in his treatise of general nosology (*nosographie*). It is affirmed that from time to time in the Campagna di Roma, individuals have been seen to die with nearly all the pathognomonical signs of yellow fever, icterus, vomiting, and hemorrhages. Notwithstanding these resemblances which are not acci-

* *Pugnet, sur les fievres du Levant et des Antilles*, p. 97 and 331.

† *Lind sur les maladies des Europeens, dans les pays chauds*, p. 14; *Berthe, Precis historique de la maladie qui a regné en Andalousie, en* 1800, p. 17.

‡ *Petrus Franck de curandis hominum morbis*, T. i. p. 150. The analogy observable between the *cholera morbus*, the bilious fever and the gastro adynamical fever, has been indicated with much sagacity in the beautiful work of M. Pinel, *Nosographie Philosophique*, (3rd edition) T. i. p. 46. and 47.

dental, we may consider the yellow fever wherever it assumes the character of an epidemical disease, as a *typhus sui generis*, which participates both of the gastric and ataxo-adynamical fevers *. We shall distinguish consequently the bilious stationary fevers, and the intermittent pernicious fevers which prevail on the banks of the Orinoco, on the coast which extends from Cumana to Cape Codera, in the valley of the Rio de la Magdalena, at Acapulco, and in a great number of other humid and unhealthy places visited by us, from the *vomito prieto*, or yellow fever, which exerts its ravages in the West Indies, at New Orleans, and Vera Cruz.

The *vomito prieto*, has never appeared hitherto on the western coast of New Spain. The inhabitants of the coast, which extends from the mouth of the Rio Papagallo, by Zacatula and Colima, to San Blas, are subject to gastric fevers, which frequently degenerate into adynamical fevers; and we might say that a bilious constitution prevails almost continually in these arid and burning plains intersected with small marshes, which serve for abodes to the crocodiles †.

* *Nosographie*, T. i. p. 139—152, and p. 209. Mr. Franck designates the yellow fever by the name of *febris gastrico-nervosa*.

† *Crocodilus aquitus*.—Cuv.

At Acapulco, bilious fevers and the *cholera morbus* are very frequent; and the Mexicans who descend from the table land to purchase goods on the arrival of the galleon, are but too frequently the victims of them. We have already described the position of that town, the unfortunate inhabitants of which, tormented with earthquakes and hurricanes, breathe a burning air, full of insects, and vitiated by putrid emanations. For a great part of the year they perceive the sun only through a bed of vapours of an olive hue, which do not affect the hygrometer placed in the lower regions of the atmosphere. On comparing the plans which I have given of the two towns in my atlas of New Spain, we may easily conjecture that the heat must be still more oppressive, the air more stagnant, and the existence of man more painful at Acapulco, than at Vera Cruz. In the former of these two places, as well as at Guayra and Santa Cruz in Teneriffe, the houses are built against a wall of rock which heats the air by reverberation. The basin of the port is so surrounded with mountains, that to give during the heats of summer some opening to the sea wind, Colonel Don Josef Barriero, *Castellano* or governor of the Castle of Acapulco, caused a cut to be made through the mountain. This bold undertaking which goes in the country by the name of *Abra* de San Nicolas, has not

been without utility. Obliged during my residence at Acapulco to pass several nights in the open air for the purpose of making astronomical observations, I constantly felt for two or three hours before sun-rise, when the temperature of the sea was very different from that of the Continent, a small current of air which entered by the breach of San Nicolas. This current is the more salutary, as the atmosphere of Acapulco is poisoned by the miasmata which exhale from a marsh called the *cienega del castillo*, situated to the east of the town. The stagnant water of this marsh disappears every year, which occasions the death of an innumerable quantity of small thoracic fishes, of a mucilaginous skin, which the Indians designate by the name of *popoyote* or *axolotl* *, although the true *axolotl* of the lakes of Mexico (Siren pisciformis of Shaw) differs essentially from it, and is only according to M. Cuvier, the larva of a great salamander. These fishes, which by rotting in heaps diffuse emanations through the neighbouring air, are justly considered the principal cause of the putrid bilious fevers which prevail on that coast. Between the town and the *cienega*, there are lime fur-

* The axolotl of Acapulco has nothing in common with that of the valley of Mexico but its colour. It is a scaly fish with two dorsal fins, of an olive brown, speckled with small yellow and blue spots.

naces in which great masses of sea-weed are calcinated. Notwithstanding the specious theories of M. Mitchell* on the oxide of azote, Acapulco is one of the most unhealthy places of the New Continent. Perhaps even if this port,

* According to this author, the oxide of azote, considered as the cause of the malignant and intermittent fevers, is absorbed by the lime, and for that reason the healthiest parts of England, France, and Sicily, are calcareous *(American Medical Repos.* Vol. II. p. 46.) The influence of rocks on the great aërial ocean, puts us in mind of the dreams of the Abbé Giraud Soulavie, according to whom "the basalts and amygdaloids augment the electrical charge "of the atmosphere, and have an influence on the morals "of the inhabitants, rendering them light headed, revo- "lutionary, and inclined to abandon the religion of their "ancestors." Whatever idea may be formed of the miasmata which occasion the insalubrity of the air, it appears very improbable according to the present state of our chemical knowledge, that ternary or quarternary combinations of phosphorus, hydrogen, azote, and sulphur, can be absorbed by lime, and particularly by the carbonate of lime. Such however, has been the political influence of the theories of Mr. Mitchell, in a country where the wisdom of the magistrates is very justly admired, that while I was at quarantine in the Delaware, on arriving from the West Indies at Philadelphia, I saw officers of the committee of Health, gravely cause the opening of the hatchway to be painted with water of lime, that the *septon* or miasma of the yellow fever of the Havannah which they supposed to exist in our vessel, should fix itself on a band of lime of three decimetres (*about a foot*) in breadth. Was it at all surprising that our Spanish sailors thought there was something magical in this pretended means of disinfection?

instead of being frequented with vessels from Manilla, Guayaquil, and other places situated under the torrid zone, were to receive vessels from Chili and the north-west coast of America, and if the town were visited at the same time by a greater number of Europeans, or inhabitants of the central table land, the bilious fevers would soon degenerate into yellow fever, and the germ of that malady would develope itself at Acapulco in a still more fatal manner than at Vera Cruz.

On the east coast of Mexico, the north winds cool the air so that the thermometer falls to 17° centegrade *, and at the end of the month of February, I have seen it remain for whole days under 21° †; while during the same period, the air being calm, at Acapulco it is at 28° or 30° ‡. The latitude of Acapulco is 3° farther south than that of Vera Cruz; and the high Cordilleras of Mexico shelter it from the currents of cold air which rush in from Canada upon the coast of Tabasco. The temperature of the air remains there in summer during the day almost continually between 30° and 36° of the centigrade thermometer §.

I have observed that on all the coasts, the

* 62°. of Fahrenheit. *Trans.*

† 69°. 8 of Fahrenheit. *Trans.*

‡ 82° and 86°. 1′ Fahrenheit. *Trans.*

§ Between 86° and 96°. 8 of Fahr. *Trans.*

temperature of the sea has a great influence on that of the neighbouring continent. Now the heat of the sea not only varies according to the latitude, but also according to the number of shallows, and the rapidity of the currents which flow from different climates. On the coast of Peru, under the 8° and 12° of south latitude, I found the temperature of the South Sea at its surface, from 15° to 16° centigrades*, while out of the current which sets in strongly from the straits of Magellan towards Cape Pariña, the great equinoctial ocean is at a temperature of from 25°. to 26†. Thus the thermometer fell at Lima in the months of July and August, 1801, to 13° 5′‡ and oranges will hardly grow there. I observed also that the heat of the sea in February, 1804, at the port of Vera Cruz was only from 20° to 22°§, while at the shore of Acapulco I found it in March 1803, from 28° to 29°‖. The union of all these circumstances increases the heat of the climate on the western coast. The heats are less interrupted at Acapulco than at Vera Cruz, and we may believe,

* Between 59° and 60°. 8′ of Fahr. *Trans.*

† From 77° to 78°. 8′ of Fahr. *Trans.*

‡ 56° 3′ of Fahr. *Trans.*

§ From 68° to 71°. 3′ of Fahr. *Trans.*

‖ From 82° 4′ to 84° 2′ of Fahr. *Trans.* See my *Recueil d'Observations Astronomiques*, T. i. p. 317. (n. 256 and 559).

if ever the yellow fever begins to prevail in the former of these ports, that it will continue during the whole year, as in the island of Trinidad, at Saint Lucia, and Guayra, and wherever the mean temperatures of the different months only vary from 2° to 3°*.

In the low regions of Mexico, as well as in Europe, the sudden suppression of transpiration, is one of the principal occasional causes of the gastric or bilious fevers, especially of the *cholera morbus* which is announced by such frightful symptoms. The climate of Acapulco, of which the temperature is uniform throughout the different parts of the year, gives rise to those suppressions of transpiration, from the extraordinary coolness which prevails a few hours before sun-rise. On that coast those persons who are not seasoned to the climate run the greatest risks when they travel by night with light clothing, or sleep in the open air. At Cumana, and in other parts of equinoctial America, the temperature of the air only diminishes towards sun-rise 1° or 2° centigrade; by day the

* From 3°. 6 to 5°. 4 of Fahr. *Trans.* The differences of mean temperature between the hottest and coldest months, are in Sweden, under the 63° 50′ of latitude, 28°. 5; in Germany, under the 50° 5′ of latitude, 23°. 2; in France, under the 48° 50′ of latitude, 21°. 4; in Italy, under the 41° 54′ of latitude, 20°. 6; and in South America, under the 10° 27′ of latitude 2°. 7′. See my comparative tables in the additions to *Thomson's Chemistry*, (Translation of M. Riffault) T. i. p. 106.

thermometer is at 28° or 29°, and by night at 23° or 24°; but at Acapulco I found the heat of the air by day 29° or 30°, during the night it kept at 26°, and from three o'clock in the morning, to sun-rise it suddenly fell to 17° or 18°. This change makes the strongest impression on the organs. No where under the tropics did I ever feel so great a coolness during the latter half of the night. It was like passing suddenly from summer to autumn; and the sun was hardly risen when we began again to complain of the heat. In a climate where the health principally depends on the functions of the skin, and where the organs are affected with the smallest changes of temperature* a cooling of the air to the extent of 10° or 12° occasions suppression of transpiration very dangerous to Europeans not seasoned to the climate.

It has been falsely affirmed that the *vomito* never prevailed in any part of the southern hemisphere, and the cause of this phenomenon has been attributed to the cold believed to be

* The temperature of the air at Guayaquil keeps so uniformly between 29° and 32° centigrades, that the inhabitants complain of cold when the thermometer suddenly falls to 23° or 24°. These phenomena are very remarkable in a physiological point of view; and they prove that the excitability of the organs is increased by the uniformity, and continued action of *habitual stimulus*.

peculiar to that hemisphere. I shall have occasion to shew in another place how much the difference of temperature of countries situated to the north and south of the Equator has been exaggerated. The temperate part of South America has the climate of a peninsula which narrows towards the south; and the summers are not so hot there, and the winters not so rude as in those countries which under the same latitude, in the northern hemisphere, widen towards the north. The mean temperature of Buenos Ayres differs but little from that of Cadiz, and the influence of the ice, the accumulation of which is undoubtedly greater at the south, than at the north pole, is hardly felt below the 48° of south latitude. We have already seen that the yellow fever in fact, first raged at Olinda in Brazil, in the southern hemisphere, and carried off a great number of Europeans. The same disease prevailed at Guayaquil in 1740, and in the beginning of this century at Monte Video, a port in other respects so celebrated for the salubrity of its climate.

For fifty years back, the *vomito* has never appeared on any point of the coast of the South Sea with the exception of the town of Panama. In this port as well as at the Callao*

* *Leblond, Observations sur la fievre jaune*, p. 204.

the beginning of the great epidemics is most frequently marked by the arrival of some vessels from Chili; not because that country which is one of the healthiest and happiest of the earth can transmit a disease which does not exist there, but because its inhabitants transplanted into the torrid zone, experience with the same violence as the inhabitants of the north, the fatal effects of an air excessively warm and vitiated from a mixture of putrid emanations. The town of Panama is situated on an arid tongue of land destitute of vegetation; but the tide when it falls leaves, exposed for a great way into the bay a large extent of ground covered with fucus, ulvæ, and medusæ These heaps of marine plants and gelatinous mollusci remain on the shore exposed to the heat of the sun. The air is infected by the decomposition of so many organic substances; and miasmata of very little influence on the organs of the natives, have a powerful effect on individuals born in the cold regions of Europe, or in those of the two Americas. The causes of the insalubrity of the air are very different on the two coasts of the Isthmus. At Panama, where the *vomito* is endemical, and where the tides are very strong, the shore is considered as the origin of the infection.

At Porto-Bello where remittent bilious fevers prevail, and where the tides are scarcely sensible, the putrid emanations spring from the very strength of the vegetation. A few years ago, the forests which cover the interior of the Isthmus, extended to the very gates of the town, and the monkies entered the gardens of Porto-Bello in bands for the fruit. The salubrity of the air has considerably increased, since the governor Don Vicente Emparan, an enlightened administrator, gave orders for clearing away the wood in the neighbourhood.

The position of Vera Cruz bears more analogy to that of Panama and Carthagena, than to Porto-Bello and Omoa. The forests which cover the eastern slope of the Cordilleras, hardly extend to the farm of l'Encero, where a less dense wood commences, composed of Mimosa, Cornigera, Varronia, and Capparis Breynia, which progressively disappears at five or six leagues distance from the sea coast. The environs of Vera Cruz are frightfully arid. On arriving by the Xalapa road, we find near *la Antigua*, a few cocoa trees which ornament the gardens of that village; and they are the last great trees to be discovered in the desert. The excessive heat which prevails at Vera Cruz is increased by the hillocks of moving sands (*meganos*) formed by the impetuosity of the north winds, and which surround the town

on the south and south west side. These hillocks which are of a conical form rise to the height of about 15 metres*; and being strongly heated in proportion to their mass, they preserve during night the temperature which they have acquired during the day. From a progressive accumulation of heat the centigrade thermometer plunged into the sand in the month of July, rises to 48° or 50°† while the same instrument in the open air and in the shade keeps at 30°‡. The *meganos* may be considered as so many ovens by which the ambient air is heated; they not only act from radiating caloric in every sense, but also from their preventing by their being grouped together, a free circulation of air. The same cause which gives rise to them easily destroys them; and these hillocks change their places every year, as may be remarked especially in that part of the desert called *Meganos de Catalina*, *Meganos del Coyle*, and *Ventorillos*.

But unfortunately for those of the inhabitants of Vera Cruz who are not seasoned to the climate, the sandy plains by which the town is surrounded, far from being entirely arid, are intersected with marshy grounds in which the rain water which filtrates through the downs

* 49 feet. *Trans.*

† 118°. 4′ or 120° of Fahr.

‡ 86° of Fahr.

is collected. These reservoirs of muddy and stagnant water are considered by M. M. Comoto, Ximenez, Mociño and other intelligent physicians who have examined before me the causes of the insalubrity of Vera Cruz, as so many sources of infection. I shall not name here the marshes known by the name of the *Cienega Boticaria*, behind the powder magazine, the *Laguna de la Hormiga*, the *Espartal*, the *Cienega de Arjóna*, and the marsh of *la Tembladera* situated between the road of *Rebenton* and the *Callejones de Aguas-largas*. At the foot of the hillocks we find only small shrubs of croton and desmanthus, the euphorbia tithymaloides, the *capraoia biflora*, the jatropha with cotton-tree leaves, and ipomoca of which the stalk and flowers hardly rise above the arid sand which they cover. Wherever this sand is bathed by the water of the marshes which overflow in the rainy season, the vegetation becomes more vigorous. The rhizophora mangle, the coccoloba, pothos, arum, and other plants, which vegetate in a humid soil charged with saline particles, form scattered thickets. These low and marshy places are the more to be feared as they are not constantly covered with water. A bed of dead leaves mixed with fruits, roots, larvæ of aquatic insects, and other collections of animal matter, enter into fermentation, in proportion as they become

heated by the rays of a burning sun. In another place I shall mention the experiments made by me while I staid at Cumana, on the action of the roots of the mangle on the ambient air, so long as they remain slightly moistened and exposed to the light; and these experiments will clear up in some degree the remarkable phenomenon antiently observed in both Indies, that of all the places where the manchineel and the mangle vegetate with vigour, the most unhealthy are those where the roots of those trees are not constantly covered with water. The putrefaction of vegetable matter is in general the more to be dreaded under the tropics, as the number of astringent plants is very considereble there, and as these plants contain in their bark and roots much animal matter combined with tan*.

If there are undoubted existing causes of the insalubrity of the air in the soil which surrounds Vera Cruz, it cannot however, be denied that there are others within the very town itself. The population of Vera Cruz is too great for the small extent of ground which the city occupies. Sixteen thousand inhabitants are confined within a space of 500,000

* Vauquelin, on the tan of gelatine and albumine. *Annales du Museum*, T. xv. p. 77.

square metres*; for Vera Cruz forms a semicircle of which the radius is not 600 metres. As the greatest part of the houses have only one story above the ground-floor, it follows that among the lower orders the number of persons inhabiting the same apartment is very considerable. The streets are broad, straight, the longest in a direction from the north west to the south east, and the shorter or cross streets from south west to north east; but as the town is surrounded with a high wall, there is little or no circulation of air. The breeze which blows feebly during summer from the south east and east south east, is only felt on the terraces of the houses; and the inhabitants, whom the north wind frequently prevents in winter from crossing the streets, breathe nothing in the hot season but a stagnant and burning air.

The strangers who frequent Vera Cruz have greatly exaggerated† the dirtiness of the inhabitants. For some time the police has taken measures for the preservation of the salubrity of the air; and Vera Cruz is at present not so dirty as many of the towns of

* 5,361,988 square feet. *Trans.*

† Thorne in the *American Med. Repos.* T. xxx. p. 46. *Luzuriaga de la calentura biliosa*, T. i. p. 65. (Translation of the work of Benjamin Rush, enriched with the observations of M. Luzuriaga.)

the south of Europe; but as it is frequented by thousands of Europeans not seasoned to the climate, and situated under a burning sky, and surrounded by small marshes from whose emanations the air is infected, the fatal effects of the epidemics will not diminish till the police shall have continued to display its activity for a long succession of years.

An intimate connection is observed on the coast of Mexico between the march of diseases, and the variations of the temperature of the atmosphere. Two seasons are only known at Vera Cruz, that of the tempests of the north (*los Nortes*) from the autumnal to the spring equinox, and that of the breezes or south winds (*brizas*) which blow with considerable regularity between March and September. The month of January is the coldest in the year, because it is farthest from the two periods in which the sun passes through the zenith of Vera Cruz*. The *vomito* generally begins first to rage in that town when the mean temperature of the months reaches 24° of the centigrade thermometer†. In December, January, and February the heat remains below this limit; and accordingly it seldom happens that the yellow fever does not entirely disap-

* The 16th of May and 27th of July.

† 75° of Fahr. *Trans.*

pear in that season when a very sensible cold is frequently felt. The strong heats begin in the month of March, and the epidemical scourge begins at the same time. Although May is warmer than September and October, it is however, in the two last months that the *vomito* commits the greatest ravages; for in every epidemic it requires a certain time before the germ of the disease is developed in all its energy; and the rains which last from the month of June to the month of September have an undoubted influence also on the production of the miasmata which are formed in the environs of Vera Cruz.

The entry and termination of the rainy season are dreaded the most under the tropics, because an excessive humidity arrests almost as much as a great drought the progress of putrefaction of the vegetable and animal substances which are accumulated in marshy situations. More than 1870 millimetres of rain water* fall annually at Vera Cruz; and in the month of July, 1803, alone, an accurate observer, M. Costanzo, colonel of the corps of engineers, collected more than 380 millimetres†, which is only one third less than the quantity which falls at London during the whole year.

* 73°. 6 inches. *Trans.*

† 14°. 9 inches. *Trans.*

To the evaporation of this rain water we must account for the caloric not being more accumulated in the air at the second than at the first passage of the sun through the zenith of Vera Cruz. The Europeans who dread falling victims to the *vomito*, consider those years as very fortunate in which the north wind continues to blow with violence till the month of March, and when it begins to be felt in the month of September. To ascertain the influence of temperature on the progress of the yellow fever, I examined carefully during my stay at Vera Cruz, tables of more than 21,000 observations which Don Bernardo de Orta, captain of the port, made there during the fourteen years preceding 1803. The thermometers of that indefatigable observer were compared with those used by me in the course of my expedition.

In the following table I exhibit the mean temperature of the months deduced from the meteorological tables of M. Orta; and I have added the number of patients who died of the yellow fever in 1803 at the hospital of Saint Sebastian. I could have wished to know the state of the other hospitals, and especially that of the monks of *San Juan de Dios*. The task which I have merely sketched will be finished at some future time by some of the intelligent persons who reside in Vera Cruz. I have

merely indicated the individuals of whom the nature of the disease was in no respect doubtful on account of the frequent vomiting of black matter. As in 1803 the concourse of strangers was uniform throughout the different parts of the year, the number of patients sufficiently indicates the progress of the *vomito*. The same table contains the variations of the climates of Mexico and Paris*, of which the mean temperature forms a singular contrast to that of the eastern coast of New Spain. At Rome, Naples, Cadiz, Seville, and Malaga, the mean heat of the month of August exceeds 24°, and consequently differs very little from the heat of Vera Cruz.

* The mean temperature of Mexico is founded on the observations of M. Alzate. (*Observaciones meteorologicas de los ultimos nueve meses del año* 1769, *Mexico* 1770). As observations made in the city of Paris indicate a temperature somewhat higher than corresponds to the latitude of 48° 50′, we have preferred the numbers of the *calendrier de Montmorency*, calculated by M. Cotte for the years 1765—1808. (*Journal de Physique* 1809, p. 382).

Meteorological and nosological table of Vera Cruz (lat. 19° 11′ 52″) centigrade thermometer.

Division of the Year.		Mean Temperature at Vera Cruz.	Progress of the Vomito, (state of the hospital of Saint Sebastian.) Entries.	Deaths.	Remarks.	Mean Temperature At Mexico.	At Paris.
North winds.	Jan.	21°. 7	7	1	At Guayra, at Cumana on the parallel of Vera Cruz, in the eastern West India Islands, and wherever the north wind does not blow, the mean temperature of the month of January is never under 25°.	Mean temperature doubtful. The thermometer falls in January to 5° or 6° and even lower.	1°. 2
	Feb.	22°. 6	6	2			4°. 3
	March	23°. 3	19	5			8°. 0
Breezes, mean temperature above 24°. Season of the vomito	April	25°. 7	20	4	Sometimes the North Wind still blows.	18°. 6	10°. 5
	May	27°. 6	73	11	First passage of the Sun over the Zenith of Vera Cruz.	18. 8	14°. 1
	June	27°. 5	49	6	Beginning of the rainy season.	16°. 9	18°. 0
	July	27°. 5	51	11	Second passage of the Sun over the Zenith of Vera Cruz.	17°	19°. 4
	August	27°. 6	94	16	Mean temperature of the month of August at Rome 26° and at Upsal 15°. 6.	17°	20°. 2
	Sept.	27°. 4	68	8	End of the rainy season.	15°. 8	16°. 4
	Oct.	26°. 2	29	3	Sometimes the North Wind blows alternately with the Breezes.	16°. 4	12°. 0
North Winds.	Nov.	24°. 0	9	2	These two months are so dry that in 1803 the quantity of rain never rose to 14 millimetres, while on the 18th of August and 15th of September more than 70 millimetres fell in 24 hours.	14°. 4	6°. 5
	Dec.	21°. 1	3	0		13°. 7	3°. 8.

The mean temperature of Vera Cruz is 25°. 4 that of Mexico 17°, and that of Paris 11°. 3.

I should have added to this table, the progress of the thermometer at Philadelphia, and the number of individuals who died there of the yellow fever each month, if I could have procured observations sufficient to give the mean temperature of the different months of the year 1803. In temperate climates, results drawn from the greatest and smallest elevations of the thermometer at certain periods give us no information respecting the mean temperature. This very simple and very old observation appears to have escaped a great number of the Physicians who entered upon the discussion of the question, whether the last epidemical diseases of Spain were occasioned by heats which might be considered as extraordinary in the South of Europe. It has been affirmed in many works, that the year 1790 was two degrees hotter than the years 1799 and 1800, because in the two last years, the thermometer only rose at Cadiz to 28° and 30°. 5* while in 1790 it rose to 32°†. The excellent meteorological observations of the Chevalier Chacon, published by M. Arejula, will throw the greatest light on this important matter, if we take the trouble of deducing the mean temperature of the months

* 82°. 4 and 86°. 2 of Fahr. *Trans.*

† 89°. 6 of Fahr. *Trans.*

from it. Medicine can only be aided by natural philosophy, when we adopt accurate methods for examining the influences of heat, humidity, and the electrical tension of the air, on the progess of diseases.

We have traced the progress which the yellow fever of Vera Cruz generally follows; and we have seen, that on an average the epidemic ceases to rage, when, at the commencement of the north winds, the mean temperature of the months falls below 24°*. The phenomena of life are no doubt subject to immutable laws; but we know so little of the whole of the conditions under which disease is introduced into the functions of the organs, that the pathological phenomena appear to exhibit to us in their succession the strangest irregularities. When the vomito commences to rage at Vera Cruz during summer with great violence, we see it prevail during the whole winter; the lowness of the temperature then diminishes the disease, but does not entirely extinguish it†. The year 1803, in which the mortality was very small, affords a striking example of this sort.

* 75° of Fahr. *Trans.*

† The feeling of heat, and the influence of temperature on the organs, depending on the degree of *habitual excitation*, the same air which passes at Vera Cruz for cold, may, under the temperate zone, favour the developement of an epidemic.

We see from the table which I have already given, that every month there were some individuals attacked by the *vomito;* but that during the winter of 1803, Vera Cruz was still suffering from the epidemic, which during the preceding summer had burst forth with such extraordinary force. The *vomito* not having been very frequent during the summer of 1803, ceased altogether in the beginning of the year 1804. When M. Bonpland and myself descended in the last days of the month of February, from Xalapa to Vera Cruz, the town contained no person under the yellow fever and a few days afterwards, in a season when the north wind still blew with impetuosity, and when the thermometer never rose to 19°*, we were conducted by M. Commoto to the hospital of Saint Sebastian, to the bed side of a dying man, a very swarthy Mexico mestizo, who was a muleteer, and came from the table land of Perote, and who had been attacked by the *vomito* in crossing the plain which separates la Antigua from Vera Cruz.

Fortunately these cases in which the disease is sporadical is in winter exceedingly rare; and a true epidemic never developes itself at Vera Cruz, but when the heats of

* 66° of Fahr. *Trans.*

summer begin to be felt, and when the thermometer frequently rises above 24°. The same progress of the yellow fever is observable in the United States. Mr. Carey has no doubt observed*, that the weeks in which the thermometer was highest at Philadelphia, were not always those, in which the mortality was the greatest; but this observation merely proves, that the effects of the temperature and the humidity of the atmosphere on the production of miasmata, and on the state of irritability of the organs, are not always instantaneous. I am far from considering an extreme heat as the only and true cause of the *vomito*; but how can it be denied, that there exists in places where the disease is endemical, an intimate connection between the state of the atmosphere and the progress of the disease?

It is incontestible that the *vomito* is not contagious at Vera Cruz. In most countries, the common people consider many diseases as contagious, which are of a very different character; but no popular opinion in Mexico has ever interdicted the stranger not seasoned to the climate, from approaching the beds of those attacked by the *vomito*. No fact can be cited to render it probable that the imme-

* *Carey, Description of the malignant fever of Philadelphia*, 1794. p. 38.

diate contact or breath of the dying person, is dangerous to those not seasoned to the climate, who may attend on the patient. On the continent of equinoctial America, the yellow fever is not more contagious, than the intermittent fevers of Europe.

According to the information which I obtained during a long stay in America, and from the observations of M. M. Mackitrick, Walker, Rush, Valentin, Miller, and almost all the physicians who have practised both in the West India Islands, and the United States, I am inclined to believe that this disease is not contagious in its nature, either under the temperate zone*; or in the equinoctial regions of the New Continent. I say from its nature; for it is not contrary to the analogy which other pathological phenomena exhibit, that a malady not essentially contagious, may, under a certain influence of climate and seasons, by the accumulation of patients, and from their individual disposition, assume a new character. It appears that the exceptions, which are infinitely rare under the torrid zone†, are

* See two excellent memoirs of *Mr. Stubbins Ffirth*, of New Jersey, and Mr. *Edward Miller*, of New York, on the non-contagious character of the yellow fever of the United States.

† *Fiedler, über das gelbe Fieber nach eigenen Beobachtungen*, p. 137—*Pugnet*, p. 393.

more particularly to be found under the temperate zone. In Spain, where in 1800 more than 47,000, and in 1804 more than 64,000 individuals fell victims to the yellow fever, "this disease was contagious, but only "in those places where it committed its ra-"vages; for it has been proved by numerous "facts, and particularly from observations "made at Malaga, Alicant*, and Carthagena, "that affected persons did not communicate "the disease in the villages to which they "retired, although the climate was the same "there as that of the contagious towns." This opinion is the result of the observations of the enlightened commission† sent by the French government into Spain, in 1806, for the purpose of investigating the developement of the epidemic.

When we successively turn our eyes to

* *Bally, Opinion sur la Contagion de la fievre jaune*, 1810, p. 40.

† M. M. Dumeril, Bally, and Nysten. It is not either in any way ascertained that the yellow fever was introduced into Spain by the Jupiter *polacra* from Vera Cruz, or the Dauphin Corvette built at Baltimore, in which Don Pablo Valiente, the intendant of the Havannah, and Don Josef Caro, the physician, were embarked. (*Arejula*, p. 251.) Three distinguished physicians of Cadiz, M. M. Ammeller, Delon, and Gonzales, believe that the yellow fever developed itself spontaneously in Spain: a disease may be contagious, without being imported.

the equinoctial regions of America, to the United States, and to those parts of Europe where the yellow fever has exercised its ravages, we see, that notwithstanding the equality of temperature which prevails during several months of the year, under zones very remote from one another, the malady assumes a different appearance. Between the tropics its uncontagious character is almost universally acknowledged. In the United States this character has been warmly contested by the faculty of medicine of the University of Philadelphia, as well as by M. M. Wistar, Blane, Cathral, and other distinguished physicians. At last, advancing north-eastwards to Spain, we find the yellow fever undoubtedly contagious, as is proved by the examples of persons who preserved themselves by shutting themselves up, although they were in the very heart of the disease.

The farm of *l'Encero* near Vera Cruz, which I found to be 928* metres, elevated above the level of the ocean, is the superior limit of the *vomito*. We have already observed that the Mexican oaks descend no farther than that place, being unable to vegetate in a heat sufficient to develope the germ of the yellow fever. Indivi-

3043 feet. *Trans.*

duals born and brought up at Vera Cruz, are not subject to this disease; and it is the same with the inhabitants of the Havanah, who do not quit their country; but it happens that merchants, born in the island of Cuba, and who have inhabited it for a great number of years, are attacked with the *vomito prieto*, when their affairs oblige them to visit the port of Vera Cruz during the months of August and September, when the epidemic is at its height. In the same manner Spanish Mexicans, natives of Vera Cruz, have been seen to fall victims to the *vomito* at Havanah, Jamaica, or the United States. These facts are no doubt very remarkable, when we consider them with respect to the modifications which the irritability of the organs exhibits. Notwithstanding the great analogy which the climate of Vera Cruz bears to that of the island of Cuba, the inhabitant of the Mexican coast, insensible to the miasmata of the air of his native country, falls under the exciting and *pathogenical* causes which act on him at Jamaica and the Havanah. It is probable that under the same parallel, the gaseous emanations which produce the same diseases, are almost the same; but that a slight difference is sufficient to throw disorder into the vital functions, and to determine that particular succession of phenomena, by

which the yellow fever is characterized. Thus I have shewn by a long series of experiments*, in which the galvanic excitation, serves to measure the state of irritability of the organs, that chemical agents excite the nerves not only from the qualities which are peculiar to them, but also from the order in which they are applied after one another. Under the torrid zone, where the barometrical pressure and temperature of the air, are nearly the the same throughout the whole year, and where the electrical tides, the direction of the wind, and all the other meteorological variations succeed one another with an immutable uniformity, the organs of the man, habituated from his birth in his native climate, to the same impressions, become sensible to the smallest changes of the surrounding atmosphere. From this extreme sensibility, the inhabitant of the Havanah, transported to Vera Cruz while the *vomito* is committing the most cruel ravages there, runs sometimes the same risk as persons not seasoned to the climate†. I

* *Experiments on the irritation of the muscular and nervous fibre* (in German) v. ii. p. 147. The second volume of this work which appeared after my departure from Europe, has never been translated into French.

† M. Pugnet (*sur les fievres de mauvaise charactere*, p. 346) made the same observations with respect to the natives of Sainte-Lucie, who visited the neighbouring islands.

say sometimes, for in general the examples are as rare, of persons born in the West Indies being attacked with the yellow fever at Vera Cruz, the United States, or Cadiz, as of negroes falling victims to this disease*.

It is also a very remarkable phenomenon, that in the equinoctial regions, at Vera Cruz, the Havanah and Portocabello, the natives have nothing to fear from the yellow fever, while in the temperate zone, in the United States, and in Spain, the natives are as much exposed to it as strangers. Are we not to seek for the cause of this difference, in the uniformity of the impressions received by the organs of the inhabitant of the tropics, surrounded by an atmosphere which varies very little in its temperature and electrical tension? Perhaps also the mixture of putrid emanations is always the same, on a soil constantly heated by the rays of the sun, and covered with organic wrecks. The inhabitant of Philadelphia sees a winter like that of Prussia, succeeded by a summer equal in heat to that of Naples; and notwithstanding the extreme *flexibility* which we observe in the organization of the people of the north, he can never as it were

* *Luzuriaga*, T. i. p. 133. M. M. Blane and Carey state that fifteen negroes, male and female, died of the yellow fever in the island of Barbadoes, and at Philadelphia.

season himself to the climate of his native country.

The whites and the mestizoes who inhabit the interior table land of Mexico, of which the mean temperature is 16° or 17°*, and where the thermometer sometimes falls below the freezing point, are more liable to contract the *vomito*, when they descend from l'Encero to the Plan del Rio, and from thence to la Antigua and the port of Vera Cruz, than the Europeans or inhabitants of the United States, who come by sea. The latter passing by degrees into the southern latitudes, are gradually prepared for the great heats which they experience on landing; but the Spanish Mexicans on the other hand, change suddenly their climate, when in the space of a few hours, they are transported from the temperate region, to the torrid zone. The mortality is very great, especially among two classes of men very different in their habits and modes of living; the muleteers (*arrieros*) who are exposed to extraordinary fatigues in descending with their beasts of burden, by tortuous roads like those of Saint Gothard, and the recruits destined to complete the garrison of Vera Cruz.

In late times every imaginable care has been bestowed on these unfortunate young men, born

* 60°. 8 and 62°. 6 of Fahr.

on the Mexican table land at Guanaxuato, Toluca, or Puebla, for the purpose of preserving them from the influence of the deleterious miasmata of the coast, without success; they have been left for several weeks at Xalapa, to season them gradually to a higher temperature; they have descended on horseback, and by night to Vera Cruz, that they might not be exposed to the sun in crossing the arid plains of la Antigua; they have been lodged at Vera Cruz in well aired apartments; but it has never yet been observed, that they were attacked with the yellow fever with less rapidity and violence, than the soldiers for whom these precautions had not been taken. A few years ago, from a combination of extraordinary circumstances, of three hundred Mexican soldiers all between the age of eighteen and twenty-five, two hundred and seventy-two perished in the course of three months; and at my departure from Mexico, the government began at last to think of entrusting the defence of the town and castle of San Juan d'Ulua, to companies of negroes and men of colour seasoned to the climate.

In the season when the *vomito* rages with great violence, the shortest stay at Vera Cruz, or in the atmosphere which surrounds the city, is sufficient to communicate the disease to persons not seasoned to the climate. The

inhabitants of the city of Mexico when they propose to sail for Europe, dreading the insalubrity of the coast, generally remain at Xalapa, till the moment of the departure of their vessel. They set out on their journey during the cool of the night, and cross Vera Cruz in a litter, to embark in the boat which awaits them at the mole, and yet these precautions are sometimes useless, and it happens that these very persons are the only passengers who sink under the *vomito*, during the first days of the passage. We might admit that in this case, the disease has been contracted on board the vessel, which remained in the port of Vera Cruz, and which contained deleterious miasmata; but the celerity of the infection is more incontestibly proved, by the frequent examples of the better sort of Europeans, dead of the *vomito*, though in arriving at the mole, they may have found litters ready to commence immediately the journey to Perote. These facts appear on a first view in favour of the system, according to which the yellow fever is considered as contagious under all the zones. But how are we to conceive that a malady is communicated at great distances*, while at Vera Cruz it is decidedly not contagious by immediate contact†? Is it not easier

* *Contagium in distans.*

† *Contagium per intimum contactum.*

to admit, that the atmosphere of Vera Cruz contains putrid emanations; which if reathed for the shortest space of time, introduce disorder into all the vital functions?

The most part of the Europeans newly landed, feel during their stay at Vera Cruz, the first symptoms of the *vomito*, which is announced by a pain in the lumbar region, by the yellow colouring of the conjunctive, and by signs of congestion towards the head. In several individuals it only declares itself when they arrive at Xalapa, or on the mountains of la Pileta, in the region of pines and oaks, at sixteen or eighteen hundred metres above the level of the ocean*. Those who have long resided at Xalapa, deem themselves able to foretel from the features of the travellers who ascend from the coast, to the table land of the interior, whether, without their being sensible of it themselves, they contain within them the germ of the disease. Dejection and fear increase the predisposition of the organs to receive the impression of the miasmata; and these same causes render the commencement of the yellow fever, more violent when the patient is imprudently informed† of the danger of his situation.

* 5248 and 5904 feet. *Trans.*

† I can cite on this subject an instance the more curious, as it paints at the same time the phlegm, and the

We have already seen that persons born at Vera Cruz, are not exposed to contract the vomito in their native country, and that in this respect they possess a great advantage over the inhabitants of the United States, who suffer from the insalubrity of their own climate. Another advantage of the torrid zone is, that the Europeans, and in general all individuals born in temperate climates, are never twice attacked with the yellow fever. Some very rare examples have been observed in the West India Islands

coldness of the natives of the coppery race. A person with whom I was on terms of intimate friendship during my stay at Mexico, had passed only a very short time at Vera Cruz, on my first voyage from Europe to America. He arrived at Xalapa without feeling any sensation indicative of the dangerous state in which he was immediately to be. "You will have the *vomito* this evening," said an Indian barber gravely to him while he lathered his face, "the soap dries as fast as I put it on, that is a never "failing sign, and for twenty years that I have been in "the practice of shaving the *chapetons*, who pass through "this town in their way to Mexico, out of every five "three has died." This sentence of death made a strong impression on the spirits of the traveller. It was in vain to represent to the Indian that his calculation was exaggerated, and that a great heat of the skin does not prove this infection; the barber persisted in his prognostic; and in reality the disease declared itself a few hours afterwards, and the traveller already on his way for Perote, was obliged to be transported to Xalapa, where he very nearly fell a victim to the violence of the *vomito*.

of a second attack, and these examples are very common in the United States; but at Vera Cruz, a person who has been once attacked with the disease, is in no dread of subsequent epidemics. The women who land on the coast of Mexico, or who descend from the central table land, run less risk than the men. This prerogative of the sex is even manifest under the temperate zone. In 1800, there died at Cadiz, 1577 women, for 5810 men, and at Seville, 3672 women, for 11,013 men. It was long believed that individuals attacked with the gout, intermittent fevers, or syphilitic diseases, did not contract the *vomito*; but this opinion is contrary to a great number of facts observed at Vera Cruz. They experience there what has been observed in the greatest part of epidemics*, that so long as the yellow fever rages violently, the other *intercurrents* (intercurrentes) are sensibly more rare.

The examples of individuals dying between thirty and forty hours after the first attack of the *vomito*, are rarer under the torrid zone, than in temperate regions. In Spain, individuals were seen to pass from a state of health to death, in six or seven hours†. In this case

* *Schnurrer, Materialien zu einer allgemeinen Naturlehre der Epidemien und Contagien*, 1810, p. 40; a work which contains valuable materials for *pathological zoonomy*.

† *Berthe*, p. 79.

the disease shows itself in all its simplicity, appearing only to act on the nervous system. To the excitation of this system, a total prostration of the forces succeeds: and the principle of life is extinguished with fearful rapidity. The bilious complications cannot in this case show themselves, and the patient experiences as he dies strong hemorrhages; but his skin does not assume a yellow colour*, nor are those matters vomited which go by the name of black bile. At Vera Cruz the yellow fever generally lasts beyond six or seven days; and this is sufficient for the irritation of the nervous system, to lose the true character of the adynamical fever.

As the *vomito* only attacks in the equinoctial region, individuals born in cold countries, and never the natives, the mortality of Vera Cruz is not so great as might be supposed, when we consider the heat of the climate, and the extreme irritability of organs which are consequent on it. The great epidemics have only carried off within the town, nearly fifteen hundred individuals per annum. I possess tables which indicate the state of the hospitals during the last fifteen years; but as these tables do

* Mr. Rush observed that at Philadelphia during the epidemic of 1793, the persons who enjoyed the best health, and even the negroes, had the conjunctive of a yellow die, and the pulse extraordinarily accelerated.

not expressly designate the patients who died of the vomito, they give us little or no information respecting the progress of art in diminishing the number of the victims.

In the hospital confided to the care of the monks of *San Juan de Dios*, the mortality is excessive. Between 1786 and 1802, there entered 27,922 patients, of whom 5657, or more than a fifth died. This number of deaths must be considered the greater, as the vomito did not prevail between 1786 and 1794, and as among the patients who entered the hospital, more than two thirds were afflicted with intermittent fevers, or other diseases which are not epidemical. At the hospital of *Our Lady of Loretto*, the mortality was much less. Between 1793 and 1802, there entered 2820 individuals, of whom 389, or a seventh died. The best managed hospital of Vera Cruz is that of Saint Sebastian, kept up at the expence of the merchants (*Hospital del Consulado*), and under the direction of a physician*, who from his knowledge, disinterestedness, and great activity, has very justly acquired a great reputation. The following is a state of that small establishment in 1803.

* *Don Florencio Perez y Comoto.*

Months.	Entered.			Left.			Deaths.		
	Vomito.	Other diseases.	Total.	Vomito.	Other diseases.	Total.	Vomito.	Other diseases.	Total.
January -	7	-	7	6	-	6	1	-	1
February -	6	-	6	4	-	4	2	-	2
March - -	19	-	19	14	-	14	5	-	5
April - -	20	21	41	17	18	35	4	2	6
May - - -	73	30	103	62	30	92	11	-	11
June - - -	49	4	53	43	3	46	6	1	7
July - - -	51	4	55	40	3	43	11	1	12
August -	94	4	98	78	4	82	16	-	16
September	68	4	72	60	4	64	8	-	8
October -	29	22	51	26	20	46	3	2	5
November	9	17	26	7	15	22	2	2	4
December	3	19	22	3	16	19		1	1
Total	428	125	553	360	113	473	69	9	78

From this table it appears that the mean mortality, was a seventh or fourteen per cent. The *vomito* alone only carried off 16 per cent; and we must also observe that more than two thirds of those who perished, were received at the hospital when the disorder had already made an alarming progress. From the tables of commerce published by the *Consulado,* it appears that there died in general at Vera Cruz in 1803, either of the yellow fever, different diseases, or old age, only 959 persons. Supposing the population sixteen or seventeen thousand souls, we find the total mortality six per cent. Now in 959 deaths, at least the half were owing to the vomito; consequently

in Vera Cruz the number of deaths, is to that of the inhabitants seasoned to the climate, nearly in the proportion of 1 to 30; which confirms a very generally received opinion in the country*, that the individuals accustomed from their infancy to the great heat of the Mexican coast, and the miasmata contained in the atmosphere, arrive at a happy old age. In 1803, the hospitals of Vera Cruz received 4371 patients, 3671 of whom were cured. The number of deaths was then only twelve per cent., although as we have seen from the state of the hospital, of Saint Sebastian, there were always during the periods when the air was cooled by the north wind some patients under the yellow fever.

We have hitherto given detailed information respecting the ravages of the *vomito* within the walls of Vera Cruz itself, during a year in which the epidemic raged with less violence than ordinary; but a great number of Mexican muleteers, sailors and young people *(polizones)* who embark in the ports of Spain to push their fortune in Mexico, fall victims to the *vomito*, in the village of *la Antigua* at the plantation of Muerto, at la Rinconada, at Cerro Gordo, and even at Xalapa when the invasion of the

* See Vol. I. p.103.

disease is too quick for them to be transported to the hospitals of Vera Cruz, or when they do not feel the attack till they ascend the Cordillera. The mortality is very great especially when several vessels of war, and a great number of merchant ships arrive in summer at the port at the same time. There are years when the number of deaths within the town and in the environs amounts to eighteen hundred or two thousand. The loss is the more afflicting as it falls upon a class of laborious men, strong in constitution, who are nearly all in the prime of life. We may see from the sad experience which the great hospital of the monks of San Juan * has afforded within the last fifteen years, that wherever patients are accumulated in a small space, and not treated with sufficient care, the mortality increases in great epidemics, to 30 or 35 per cent.; while in situations, where every care can be bestowed, and where the physician varies his treatment according

* There was an intention in 1804 to suppress this hospital, and to replace it by another under the name *of house of beneficence (casa de beneficiencia)*. Throughout all Spanish America, well informed persons complain of the methods of cure employed by the monks of *San Juan de Dios*. The task undertaken by this congregation is one of the most noble; and I could mention many examples of the disinterestedness and courage of these monks; but at a sick-bed charity will not supply the want of knowledge of art.

to the different forms under which the disease appears, in such or such a season, the mortality does not exceed twelve or fifteen per cent. We have derived this number from the lists of the hospital of the *Consulado* under the direction of M. Comoto. It no doubt appears very small when we compare it with the ravages recently made by the yellow fever in Spain*; but when we oppose these circum-

* We may judge of the mean mortality observed in Spain in the epidemics of 1800, 1801, and 1804, from the following table founded on statements which I owe to the obliging kindness of M. Dumeril.

Years.	Towns.	Patients.	Deaths.	Mean mortality.
1800	Cadiz	48,520	9,977	20 per cent.
	Seville	76,000	20,000	26
	Xerez	30,000	12,000	40
1801	Seville	4,100	660	60
1804	Alicante	9,000	2,472	27
	Cadiz	5,000	2,000	40

M. Arejula informs us that in every 100 patients, there died in 1800 at Seville 19; in 1804 at Alicant 26; at Malaga in 1803 nearly 40, and more than 60 in 1804. He affirms that the physicians in Spain may boast of having cured three fifths of the patients who vomited black matter (*De la Febre*, p. 148, 433—444). This assertion of a celebrated practician would indicate, in the case of a great exacerbation of the disease, a mortality of 40 per cent.

stances to one another we must not forget that the disease does not rage every year, and does not affect every individual with the same violence. To obtain accurate results as to the proportion between the deaths and the patients we must distinguish the different degrees of *exacerbation* of the *vomito*, in its progressive developement. According to Russel, even the plague appears sometimes at Aleppo, under such benign almospherical influences, that many of the infected individuals are not confined to bed during the whole course of the epidemic.

In the environs of Vera Cruz, the *vomito*, is only felt in the country at the distance of ten leagues from the coast. In proportion as we advance towards the West, the ground rapidly rises, and as the temperature of the air is affected by this elevation, New Spain cannot throw any light on the important question, whether the yellow fever is ever developed in places at a distance from the sea. M. Volney * relates that an epidemical disease, bearing a great resemblance in many respects to the yellow fever, prevailed to the east of the Alleghany mountains, in the marshy grounds which surround fort Miami, near lake Erie; and M. Ellicott made similar observations respecting the banks of the Ohio; but

* *Tableau du Sol de l'Amerique*, Vol. II. p. 310.

we must not forget that remittent bilious fevers sometimes assume the adynamical character of the yellow fever. In Spain as well as in the United States, the epidemic has always followed the sea coast, and the course of the great rivers. It has been called in question whether it ever really prevailed at Cordova; but it appears certain that it exercised its ravages at Carlota, five leagues to the South of Cordova, a very healthy town situated on a high hill, and open to the most salubrious winds. *

The system of Brown did not excite greater enthusiasm at Edinburgh, Milan, and Vienna, than it has excited in Mexico. Those persons of intelligence who were enabled to observe with impartiality the good and the evil produced by the stimulant system, are in general of opinion that upon the whole American medicine has gained by this revolution. The abuse of bleeding, purgatives, and all the debilitating remedies was very great indeed in the Spanish and French Colonies; and this abuse not only increased the mortality among people in bad health, but was detrimental to newly arrived Europeans, who were bled

* *Berthe*, p. 16. Carlota is twenty-six leagues in a straight line from the sea.

while in the enjoyment of the best health, and to whom this prophylactical treatment became a predisposing cause of disease *. Is it to be wondered at, that notwithstanding its imperfections and its deceitful simplicity, the method of Brown was productive of good in a country where an adynamical fever was treated as an inflammatory fever; where they dreaded to administer quinquina, opium, and ether; where in the greatest prostration of strength, they were patiently waiting for a crisis, prescribing all the time nitre, water of marsh-mallows, and infusions of scoparia dulcis? The reading of the works which have appeared on the Brownonian system induced the Spanish physicians to reason on the causes and forms of diseases. Ideas long ago announced by Sydenham, the school of Leyden, by Stoll and by Frank, have found admission into America; and they now attribute to the system of Brown a reform due to the commencement of a spirit of observation, and the general progress of intelligence.

Although the *vomito* is announced by a sthenical diathesis, the bleedings so warmly recommended by Rush, and frequently employed by the Mexican physicians in the great

* *Pinel*, T. i. p. 207. *Gilbert, Maladies de Saint Domingue*, p. 91.

epidemic of 1762 are looked upon as dangerous at Vera Cruz. Under the tropics the passage from the synoque to the typhus, and from an inflammatory state to a state of languor is so rapid, that the loss of blood, which is falsely said to be in dissolution, accelerates the general prostration of the strength. In the first period of the *vomito*, minoratives, baths, ice water, the use of sherbets, and other debilitating remedies are preferred. When to use the language of the school of Edinburgh the indirect debility is felt, they employ the most energetic excitants, beginning with strong doses, and gradually diminishing the *power* of the stimulants. Mr. Comoto was very successful in giving more than a hundred drops of sulphuric ether, and from sixty to seventy drops of tincture of opium per hour. This mode of treatment is a singular contrast to that which is used by the lower people, and which consists in not raising the vital strength by stimulants, but merely in employing lukewarm and mucilaginous drinks, infusions of tamarind, and fomentations on the epigastric region to calm the irritation of the abdominal system.

The experiments which were carried on at Vera Cruz till 1804, as to the use of quinquina in the yellow fever, were not at-

tended with success *, although this bark has frequently produced the most salutary effect in the West India Islands, and in Spain †. It is possible that this difference of action arises from the variety of forms assumed by the disease, according as the remission is more or less marked, or as the gastric symptoms predominate over the adynamical symptoms. Mercurial preparations, especially calomel or muriate of sweet mercury with jalap, have frequently been employed at Vera Cruz; but these remedies so much boasted at Philadelphia and Jamaica, and prescribed in ataxical fevers by the Spanish physicians of the sixteenth century, ‡ have been very generally abandoned by the Mexican physicians. They have been more fortunate in the use of frictions of oil of olives, the utility of which was acknowledged by M. Ximenez of the Havanah, by Don Juan de Arias of Carthagena,

* According to the observation of M. M. Rush and Woodhouse, they were not more successful at Philadelphia, in the epidemic of 1797. *Luzuriaga*, T. ii. p. 218.

† *Pugnet* p. 367. *Arejula*, p. 151 and 209. Messrs. Chisholm and Seamen preferred the *Cortex Angusturæ* (the bark of the Bonplandia trifoliata) to the use of quinquina.

‡ *Luis Lobera de Avila, Vergel de Sanidad* 1530. *Andres de Laguna, sobre la cura de la pestilencia*, 1566. *Francisco Franco de las enfermedades contagiosas*, 1569.

de las Indias *, and especially by my friend M. Keutsch, a distinguished physician of the island of Santa Cruz, who has collected many interesting observations respecting the yellow fever of the West India Islands. For some time sherbets, the juice of ananas (*xugo de piña*) and the influence of the *palo mulato*, a vegetable of the amyris genus, were considered at Vera Cruz as specifics against the vomito; but a long and melancholy experience has gradually discredited these medicines even among the lower order of Mexicans. If they are to be reckoned among the best prophylactic means, they cannot however be the basis of a curative treatment.

As an excessive heat increases the action of the bilious system, the use of ice must be very salutary under the torrid zone. Relays have been established for the purpose of carrying the snow with the greatest celerity on mules, from the slope of the volcanos of Orizaba to the port of Vera Cruz. The length of road which the *snow post* (*posta de nieve*) travels is twenty eight leagues. The Indians make choice of pieces of snow mixed with agglutinated hail. According to an antient custom they wrap up these masses with dried herbs, and sometimes even with ashes, two substances which we know to be bad conductors of caloric. Although the

* *Luzuriaga*, T. ii. p. 218.

mules loaded with the snow of Orizaba arrive in full trot at Vera Cruz, more than the half of the snow is nevertheless melted during the road, the temperature of the atmosphere being constantly in summer, from 29° to 30° degrees of the centigrade thermometer *. Notwithstanding these obstacles, the inhabitants of the coast may daily procure sherbets of ice water. This advantage which is not possessed in the West India Islands, at Carthagena, and Panama, is of the greatest consequence to a town which is daily frequented by men born in Europe, and on the central table land of New Spain.

Although the yellow fever is not dangerous by immediate contact at Vera Cruz, and it is in no wise probable that it ever was introduced there from any other place †, it is not the less certain that it only appears at certain periods, without any discovery having yet been made of the modifications of atmosphere which under

* From 84° to 86° of Fahr. *Trans.*

† "Vera Cruz neither received the germ of this cruel "disease from Siam nor from Africa, nor from the West "India Islands, nor from Carthagena, nor from the United "States; this germ was produced (*engendrado*) in its own "territory; and it always exists there though it only deve-"lopes itself under the influence of certain climatical cir-"cumstances." Comoto in his *Informe al prior del consulado de la Vera Cruz, del mes de Junio*, 1803. (MS.)

the torrid zone produce these periodical changes. It is to be regretted that the history of the epidemics does not go farther back than half a century. The great *military hospital* of Verâ Cruz was established in December 1764, but in no document preserved in the archives of that hospital is any mention made of the diseases which preceded the *vomito* of 1762. This epidemic which began under the viceroyship of the Marquis de Croix continued its ravages till 1775, when after paving the streets of Vera Cruz they made some feeble attempts to diminish the extreme dirtiness of the town. The inhabitants at first imagined that the pavement would increase the insalubrity of the air by augmenting, from the reverberation of the solar rays, the insupportable heat which prevails within the town; but when they saw that the *vomito* did not make its appearance from 1776 to 1794, they then believed that this pavement had secured them for ever from it, without reflecting that the marshes of stagnant water situated to the south and east of the town, continued to pour into the atmosphere the putrid emanations which in all times were regarded at Vera Cruz as the principal focus of the deleterious miasmata. It is a very remarkable fact, that during the eight years which preceded 1794, there was not a single example of *vomito*, although the concourse of

Europeans and Mexicans from the interior was extremely great, and the sailors not seasoned to the climate, gave themselves up to the same excesses which are now laid to their charge, and although the town was not so clean as it has been since the year 1800.

The cruel epidemic which appeared in 1794, began with the arrival of three vessels of war, the ship *El Mino*, the frigate *Venus*, and the howker *Santa Vibiana*, which had all touched at Porto Rico. As these vessels contained a great number of young sailors not seasoned to the climate, the *vomito* commenced then at Vera Cruz with extreme violence. Between 1794 and 1804, the disease re-appeared every year when the north winds ceased to blow. We see that between 1787 and 1794, the royal military hospital* only received 16,835 patients,

* This hospital receives all patients who come by sea. There were,

Years.	Treated.	Died.
In 1792	2887	71
1793	2907	77
1794	4195	453
1795	3596	421
1796	3181	176
1797	4727	478
1798	5186	195
1799	14672	891
1800	9294	505
1801	7120	226
1802	5242	441

while between 1795 and 1802, their number had increased to 57,213. The mortality was very great, especially in 1799, when the Marquis de Branciforte the viceroy, dreading a disembarcation of the English on the eastern coast, ordered a number of troops to be cantoned in a very unhealthy place, at *Aroyo Moreno*, two leagues and a half from Vera Cruz.

We must observe that in the period which preceded the epidemic of 1794, the yellow fever never ceased to rage at the Havanah, and in the other West India Islands, with which the merchants of Vera Cruz constantly kept up commercial relations; and several hundreds of vessels annually came from these infected places without going quarantine, yet the vomito never appeared among the Europeans. I examined in the meteorological registers of M. Orta, month by month, the temperature of the year 1794; and far from being higher, it was ac-

Before the commencement of the epidemic of 1794, the mortality was only 2½ per cent. and now it is from six to seven per cent., and it would be still greater if this hospital did not receive, like every military hospital, many seamen whose diseases are not severe. In the civil hospitals of Paris, in a hundred patients, generally from fourteen to eighteen die; but we must not forget that these hospitals admit of a great number of patients on the point of death, or of a very advanced age. *Travaux du bureau central d'admission*, 1809. p. 5.

tuaally less than that of the preceding years, as is proved by the following table:

Mean temperature of Vera Cruz, (centigrade thermometer.)

Months.	No vomito prieto.		Epidemics of vomito prieto.	
	1792.	1793.	1794.	1795.
January . .	21. 5	20. 8	20. 6	20. 7
February . .	21. 5	22. 3	22. 8	21. 0
March . .	23. 7	22. 8	22. 6	22. 5
April . . .	24. 2	26. 1	25. 3	24. 0
May . . .	27. 3	27. 9	25. 3	26. 3
June . . .	28. 5	27. 8	27. 5	27. 2
July . . .	27. 5	26. 9	27. 8	27. 7
August . .	28. 3	28. 1	28. 5	27. 8
September .	27. 5	28. 1	27. 1	26. 1
October . .	26. 3	25. 5	26. 1	25. 0
November . .	24. 7	24. 4	23. 0	24. 3
December . .	21. 9	22. 1	21. 7	21. 9
Mean temperature of the year	25. 2	25. 2	24. 8	24. 5

The heat and humidity of the air may influence in two very different manners the developement of epidemics. They may favour the production of miasmata, or simply increase the irritability of the organs, and act as predisposing causes. From the facts which we have already related, it is impossible to deny

the influence of the temperature on the progress of the *vomito* at Vera Cruz; but nothing proves that when the malady has ceased to prevail for several years, a very warm and very humid summer is sufficient to re-produce it; and the heat really does not alone produce what is very vaguely designated by the name of *bilious constitution*. Notwithstanding the yellow colour which the skin of the patient assumes, it is nowise probable that the bile passes into the blood *, and that the liver and the system of the *porta* act the principal part in the yellow fever as has been frequently supposed. The black matter in the *vomito prieto* bears a feeble analogy to the bile: it resembles coffee grounds, and I have sometimes seen that it left indelible stains on linen, or on the wall. It disengages itself from the sulphuretted hydrogen when slightly heated. According to the experiments of M. Ffirth †, it contains no albumine,

* Human bile abounds in albumine: in 1100 parts, it contains 42 of albumine, 58 of resin, yellow matter, soda and salt, and 1000 of water. *Thenard* in the memoires *d'Arcueil*, T. i. p. 57.

† From the experiments made with great care by M. Thenard, there is no bile in the blood of persons attacked with the icterus. M. Magendie who has enriched physiology with ingenious experiments on the action of poisons, has observed that a dog of a moderate size, dies if more than seven grammes of bile is injected into his veins. In this case the serum does not assume a yellow colour, and the

but a resin, or oily matter, phosphates and muriates of lime and soda. The same anatomist has proved from the opening of dead bodies in which the pylorus was totally obstructed, that the matter of the *vomito* is not furnished by the hepatic canals, but is poured into the stomach by the arteries diffused throughout the mucous membrane. He asserts, and the assertion is very remarkable, that we find after death, the black matter still contained in these same vessels *.

Some of the physicians of New Spain admit that the epidemics of the *vomito* as well as the small pox, are periodical in the torrid zone, and that the happy time already approaches when Europeans may land on the coast of Vera Cruz, without incurring greater risk than at Tampico, Coro, Cumano, or wherever the climate is excessively warm, and at the same time

conjunctive of the animal remains white. Immediately after the injection, the bile is not recognized in the blood by its savour, although the smallest quantities of bile are sufficient to give a bitter taste to a considerable mass of water. M. Autenrieth has observed that in man the serum of the blood becomes yellow in diseases which announce no bilious complications (*Physiologie*, B. ii. p. 93. *Grimaud second Memoire sur la nutrition*, p. 78.) We know also that the skin becomes yellow in a state of health, with old men, and that it takes a yellowish tint in contusions, and wherever there is extravasated blood.

* *Stubbins Ffirth*, p. 37 and 47.

very healthy. If this hope is realised, it will be of the greatest importance carefully to examine the modifications of the atmosphere, the changes which shall take place at the surface of the earth, the draining of marshes, and in a word, all the phenomena which shall coincide with the termination of the epidemic. I should not be surprised, however, that these researches led to no positive result. The beautiful experiments of M. M. Thenard and Dupuytren, have taught us that extremely small quantities of sulphuretted hydrogen mixed with atmospheric air, are sufficient to produce asphyxia *. The phenomena of life are modified by a great number of causes, the most powerful of which escape our senses †. We see diseases arise wherever organized substances, impregnated with a certain degree of humidity and heated by the sun come into contact with the atmospheric air. Under the torrid zone the smallest marshes are the more dangerous, being surrounded as at Vera Cruz and Carthagena with an arid and sandy soil, which raises the temperature of the ambient air. We may conjecture some of the conditions under which the gazeous emanations which are designated

* A dog is asphyxiated in an air containing two thousand parts of sulphuretted hydrogen.

† *Gay-Lussac*, and *Humboldt, Exp. sur les princ. constituans de l'atmosphere*, p. 25 and 28.

by the name of miasmata are formed, but we are ignorant of their chemical composition. We are no longer permitted to attribute intermittent fevers to the hydrogen accumulated in warm and humid situations; ataxical fevers to ammoniacal emanations; or inflammatory diseases to an increase of oxygen in the atmospheric air. The new chemistry to which we owe so many positive truths, has also taught us that we are ignorant of many things which we long flattered ourselves we knew with certainty.

Whatever be our ignorance respecting the nature of the miasmata, which are perhaps ternary or quaternary combinations, it is not the less certain that the insalubrity of the air of Vera Cruz would be sensibly diminished, if they could but drain the marshes in the neighbourhood of the town; if they could supply the inhabitants with potable water; if the hospitals and church-yards could be removed to a distance*; if frequent fumigations of oxygenated muriatic acid were made in the apartments of the patients, in churches, and especially on board of vessels; and finally, if the walls of the town which force the population to be con-

* In 1804 the richest merchants of the town, in order to overcome by their example the prejudices of the lower orders, made a formal declaration that themselves and families should not be interred within the town.

centrated in a small space of ground, and prevent the circulation of air without preventing contraband trade, were to be thrown down.

If on the other hand the government fall upon the extremity of destroying a town, the building of which has cost so many millions; and if it forces the merchants to settle at Xalapa, the mortality of Vera Cruz will not diminish so much as may at first be believed. No doubt the Negro muleteers or natives of the coast might carry the goods to the farm of *l'Encero* which is the *superior limit of the vomito,* and it would not be necessary for the inhabitants of Queretaro and Puebla to descend to the port for their purchases; but the seafaring people among whom the vomito commits the most cruel ravages would be always obliged to remain in the port. The persons who should be forced to remain at Xalapa would in fact be those who are habituated to the climate of Vera Cruz, because for a long time their commercial affairs have fixed them on the coast. We shall not examine in this place the extreme difficulty with which affairs which comprehend an annual capital of 250 millions of livres tournois* can be carried on at so great a distance from the port and magazines; for the beautiful town of Xalapa where

* Upwards of £10,200,000 sterling. *Trans.*

there is a perpetual spring, is more than twenty leagues distant from the sea. If Vera Cruz is destroyed, and a fair established at Xalapa, the trade will of new fall into the hands of a few Mexican families who will gain immense wealth; and the inferior merchant will be unable to make head against the expence of frequent journies from Xalapa to Vera Cruz and the double establishment on the mountains and on the coast.

The inconveniences which would be occasioned by the destruction of Vera Cruz have been stated to the viceroy by persons of intelligence; but it has at the same time been proposed to shut up the port during the months of the great heats, and to limit the entry of vessels to winter, when Europeans run no risk of contracting the yellow fever. This appears a very wise measure when we merely consider the danger incurred by the sea-faring people already in the port, but we must not forget that the same north winds by which the atmosphere is cooled, and by which the germ of infection is extinguished, are also very dangerous to navigation in the gulph of Mexico. If the vessels which annually arrive in the port of Vera Cruz were all to arrive during winter, shipwrecks would be extremely common both on the coast of America and the coast of Europe. Hence, before having re-

course to such extraordinary measures all the means calculated to diminish the insalubrity of a town, the preservation of which is not only connected with the individual prosperity of its inhabitants, but also with the public prosperity of New Spain should be re orted to.

BOOK VI.

REVENUE OF THE STATE—MILITARY DEFENCE.

CHAPTER XIII.

Actual revenue of the kingdom of New Spain.—Its progressive augmentation since the beginning of the eighteenth century.—Sources of the public revenue.

THE object of our researches has hitherto been to explain the principal sources of the public prosperity. It now remains for us at the end of this work, to examine into the revenue of the state, destined to provide for the expences of administration, the maintenance of magistrates, and the military defence of the country. According to old Spanish laws, each viceroyalty is not governed as a domain of the crown, but as an insulated province, separated from the mother country. All the institutions

that together form a European government, are to be found in the Spanish colonies, which we might compare to a system of confederated states, were the colonists not deprived of several important rights in their commercial relations with the old world. Hence, we may draw up a table of the public revenues of New Spain in the same manner as we may draw up a state of the revenues of Ireland and Norway, which are governed in the name of the kings of England and Denmark. The greatest part of those provinces which go in the Peninsula, not by the name of colonies, but by that of *kingdoms* (*reynos*) contribute no net revenue to the king of Spain. Every where, with the exception of Peru and Mexico, the duties and imposts levied, are absorbed by the expences of interior administration. I shall not here discuss at length the vices of that administration; they are the same which are observable in European Spain, and against which writers on political economy both national and foreign have raised their voice since the commencement of the eighteenth century.

The revenue of New Spain* may be estimated at *twenty millions of piastres*†, *six millions* of which are sent into Europe to the

* *Producto de las Rentas Reales del Reyno.*

† £4,200,000 sterling. *Trans.*

royal treasury. The extraordinary increase of the public revenue since the commencement of the eighteenth century proves, as well as the augmentation of tithes* of which we have already spoken, the progress of population, the greatest commercial activity, and the increase of national wealth. The revenue of the state, according to the registers preserved in the archives of the viceroy, and in the chamber of accounts (*tribunal mayor de cuentas*) was:

	Piastres†.
In 1712 - - -	3,068,400
1763 - - -	5,705,876
1764 - - -	5,901,706
1765 - - -	6,141,981
1766 - - -	6,538,941
1767 - - -	6,561,316
Total from 1763 to 1767	30,849,820
Average of these five years	6,169,964

* See chap. x. vol. iii. p. 97.

† The table of the revenues from 1763 to 1784 is derived from a manuscript memoir drawn up in the *Tribunal de Mineria* of Mexico in 1784 to prove to the viceroy the influence of the progress of mining on the revenue of the state. The produce of the years 1785, 1789 and 1792 has been already published in the *Viagero Universal*, xxvii. p. 217. See also *Pinkerton's New Geography* (English edition) vol. iii. p. 167.

	Piastres.
From 1767 to 1769 at an average annually - - -	8,000,000
From 1773 to 1776 at an average	12,000,000
From 1777 to 1779 at an average	14,500,000

c

	Piastres.
In 1780 - - -	15,010,974
1781 - - -	18,091,639
1782 - - -	18,594,492
1783 - - -	19,579,718
1784 - - -	19,605,574
Total from 1780 to 1784	90,882,397
Average of these five years	18,176,479

	Piastres.
In 1785 - - -	18,770,000
1789 - - -	19,044,000
1792 - - -	19,521,698
1802 - - -	20,200,000

The average of the five years from 1780 to 1784 differs from the average corresponding to the period from 1763 to 1767, more than two thirds, i. e. 12,006,515 piastres. The diminution of the price of mercury from 82 to 62 piastres the quintal, the establishment of a free trade, the introduction of the tobacco farm, and several other measures of government which we have already explained may be

considered as the causes of this increase of revenue.

The following are the principal branches of the revenue of New Spain:

1st, Revenue drawn from the produce of the gold and silver mines*, *five millions and a half of piastres;*

Viz.

	Piastres.
Duties† paid at the royal treasury by the proprietors of mines (*derecho de oro y plata*), under the denominations of half fifth, duty of one per cent, and duty of coinage and signiorage in 1795 - -	3,516,000
Net profit on the sale of mercury in 1790‡ - - -	536,000
Net profit of coinage§ - -	1,500,000

In 1793, the mint of Mexico along with the house of *separation* produced 1,754,993 piastres; the expences amounted to 385,568 piastres, and the net profit of the mint amounted to 1,369,425 piastres. *The gold and silver duties* have increased within the last 40 years with the quantity of precious metals extracted from

* *Renta del producto y beneficio metalico.*

† See vol. iii. p. 329.

‡ See vol. iii. p. 386.

§ See vol. iii. p. 483.

the mines of Mexico; from 1763 to 1767, that quantity was 58,192,316 piastres, or at an average 11,638,463 piastres per annum; from 1781 to 1785, after the diminution of the price of mercury, the establishment of a supreme council of mines, and the edict of free trade, the produce of the mines amounted to 101,245,573 piastres, or at an average 20,249,114 piastres per annum. In 1790 the duty on gold amounted to 19,382 piastres; and the duty on silver to 2,021,238 piastres. The net profit of the mint of Mexico is at present nearly six times greater than that of the mint at Lima.

2nd. Revenue of the manufacture of tobacco* *from four millions to four millions and a half of piastres.* In 1802 the value of the tobacco purchased from the cultivators of Orizaba and Cordova amounted to 594,000 piastres; and the value of the tobacco sold on account of the king amounted to 7,687,000 piastres. The expences of manufacture in the same year amounted to 1,285,000 piastres. Now as the expence of management or the salaries of the officers, &c. exceed the sum of 794,000 piastres, the net revenue was only 4,092,000 piastres.

We see from these accurate data drawn

* *Producto del Real estanco del tabaco.* See vol. iii. p. 42 and 466.

from a table already given by us in the 12th chapter, that this branch of public administration is so vicious, that the salaries of officers consume 19 per cent. of the net revenue. The latter agreeably to a royal cedula issued during the time of the ministry of Galvez ought to be sent into Spain; it is the *liquido remisible a la Peninsula* which ought to remain untouched, and which the viceroys under no pretext can employ in the internal wants of the country. The great royal manufactory of Seville principally manufactures tobacco from Brazil, although the Spanish Rio Negro, the Island of Cuba, the province of Cumana, and many other provinces of Spanish America are capable of furnishing the most aromatic tobacco. Its produce, which is four millions of piastres, nearly equals the net revenue of the tobacco farm of Mexico; and both of these exceed the revenue of the Crown of Sweden; but it is not so much the greatness of the duty which renders it odious to the people, as the manner in which it is raised. Of all the reforms proposed in the administration of the finances of the colonies, the most desireable are the suppression of the tobacco system, and the abolition of the tribute on the Indians.

3rd. Net revenue of the Alcavalas, nearly *three millions of piastres.* The gross produce of this branch of taxation according to an

average from 1788 to 1792 was 3,259,504 piastres. Discounting the expence of collection and salaries amounting to 371,148 piastres, there remains a net revenue of 2,888,356 piastres. The activity of commerce has so much increased within the last forty years, that the produce of the alcavalas from 1765 to 1777 amounted to 19,844,053 piastres; while between 1778 and 1790 it amounted to 34,218,463 piastres. The customs of Mexico hardly produced from 1766 to 1778—6,661,900 piastres; from 1779 to 1791 they produced more than 9,462,014 piastres. In 1799, the revenue of the *alcavalas* only amounted to 2,407,000 piastres; but it has greatly increased since that time. In the revenues the expence of collection defrayed by the people amounts to 13 per cent. The alcavala not being paid by the Indians we conclude that this impost is equal to an annual capitation of $1\frac{1}{2}$ piastres on the whites and mixed casts.

4th. Net produce of the Indian capitation tax* *one million three hundred thousand piastres.* The increase of the produce of this tribute proves the increase of the Indian population, a fact very little known in Europe, which affords great consolation to the friends of humanity. From 1788 to 1792, the capitation tax on the

* *Tributos.* See vol. i. p. 187.

Indians amounted at an average to 1,057,715 piastres annually. Now the expences of collection and salaries were 55,770 piastres, to which we must add 102,624 piastres for pensions paid to the descendants of Montezuma and several of the *Conquistadores*, for sums destined for the support of the halberdiers (*alabarderos*) of the viceroy, and for other charges. When we discount these 158,394 piastres from the gross produce of the tribute, we find a net produce of tribute (*liquido*) of 899,321 piastres. In 1799 this liquido amounted to 1,247,000 piastres, while in 1746 it was only 650,000 piastres. The capitation of the Indians from 1765 to 1777 was stated in the registers at 10,444,483 piastres; and from 1778 to 1790 at 11,506,602 piastres. The expence of collection of this impost does not exceed six per cent. of the net produce.

5th. Net produce of the duty on pulque *eight hundred thousand piastres.* This duty on the fermented juice of the agave*, the wine of the Indians produced in the towns of Mexico, Toluca, and Puebla de los Angeles at an average from 1788 to 1792 a net annual sum of 761,131 piastres: in 1799 it amounted to 754,000 piastres. Expence of collection of this revenue seven per cent. of the *liquido*. The manufacture of pulque was altogether pro-

* See vol. ii. p. 525.

hibited by the laws of Charles I. and Philip III.

6th. Net produce of the duty on imports and exports, under the name of *almoxarifazgo, half a million of piastres.*

7th. Produce of the sale of papal indulgences or bulls *de la cruzada two hundred and seventy thousand piastres.*

8th. Net produce of the post*, *two hundred and fifty thousand piastres.* This produce between 1765 and 1777 was 1,006,054 piastres; and between 1778 and 1790 was 2,420,426 piastres; an augmentation which both demonstrates the progress of civilization and commerce.

9th. Net produce of the sale of powder†, *one hundred and fifty thousand piastres;* from 1788 to 1792 it was at an average 144,636 piastres annually.

10th. Net produce of the revenue levied on clerical benefices, under the name of mesada and media anata, *one hundred thousand piastres.*

11th. Net produce on the sale of cards, *one hundred and twenty thousand piastres*‡.

12th. Net produce of stamp duties *(papel Sellado) eighty thousand piastres;* from 1788

* *Renta de Coreos.*

† *Liquido del real estanco de la polvera.* See vol. iii. p. 470.

‡ *Estanco de naypes.*

to 1792 at an average 60,756 piastres per annum.

13th. Net produce of the farm of cock-fighting*, *forty-five thousand piastres.*

14th. Net produce of the farm of snow, *thirty thousand piastres.* If there were not countries in Europe where a tax is paid on day-light, we might well be surprised to see in America that the bed of snow which covers the high chain of the Andes is considered as a property of the king of Spain. The poor Indian who with danger reaches the summit of the Cordilleras can neither collect snow nor sell it in the neighbouring towns without paying a duty to government. This strange custom of considering the sale of ice and snow as a royal right, existed also in France at the beginning of the seventeenth century, and the *Ferme des nieges* was only put a stop to at Paris because the magnitude of the duty produced such a rapid diminution of the use of cooling beverages that the court thought it more advisable to declare the trade in ice and snow completely free. At Mexico and Vera Cruz where the summits of the Popocatepetl and the Pic d'Orizaba furnish snows for the making of sherbets, the *estanco de la nieve* was only introduced in 1779.

* *Estanco de los juegos de gallos.*

We have thus compared the total revenue of New Spain at different periods of the eighteenth century; let us now pursue this comparison in the different branches of impost indicated in the statistical work of Villa-Señor, published at Mexico in 1746; and we shall see at each article irrefragable proofs of the progress of population and public prosperity.

Comparative table of the revenue of New Spain.

Sources of the public revenue.	In 1746.	In 1803.
	Piastres.	Piastres.
Duties levied on the produce of the mines -	700,000	3,516,000
Mint - - -	357,500	1,500,000
Alcavala - -	721,875	3,200,000
Almoxarifazgo - - -	373,333	500,000
Indian capitation tax -	650,000	1,200,000
Cruzada - - -	150,000	270,000
Media anata - -	49,000	100,000
Duty on pulque or agave juice - - -	161,000	800,000
Duty on cards - -	70,000	120,000
Stamps - - -	41,000	80,000
Sale of snow - -	15,522	26,000
Sale of Powder - -	71,550	145,000
Cock-fighting - -	21,100	45,000

We have only included in this table the duties, the tarif of which has not been increased since 1746, when the monopoly of tobacco

was not yet introduced, and the metallic produce instead of 23 millions only 10 millions of piastres. Robertson in the edition of the History of America, published in 1788, only values the revenue of Mexico at four millions of piastres, while it actually amounted at that period to more than eighteen millions. Such was the state of ignorance in Europe at that time respecting the colonies of Spain, that that learned and illustrious historian when treating of* the finances of Peru, was compelled to derive his information from a manuscript drawn up in 1614.

M. Necker† calculated in 1784 the contributions at 23 livres, 13 sous or $4\frac{1}{2}$ piastres per head of all sexes and ages in France. Reckoning the number of inhabitants in New Spain at 5,837,000 and the revenue at twenty millions of piastres, we shall have $3\frac{4}{7}$ per head of all sexes and ages. Peru which at present contains only a million of inhabitants, and yields a revenue of three millions and a half of piastres, gives nearly the same result. As the Indians subject to the capitation tax pay no alcavala, and make no use of tobacco, calculations of this sort which are not very instructive even for Europe, are by no means applicable to America. Besides it is not so much the mass

* *Robertson*, vol, iv. p. 352, note xxxiii.

† *Necker, de l'Administration des finances*, T. i. p. 221.

of imposts as their distribution, and the mode of their recovery, which occasion the distress of the inhabitants. To attain a certain degree of accuracy in calculations so vague in their nature, we ought not wholly to reckon among the burdens supported by the inhabitants of New Spain, the duties on gold and silver, and the profits of the mint, which together come in for more than a fourth part of the total revenue of the country. We will not enter here into discussions capable of affording so very little satisfaction; and we shall rather hasten to complete the view of the Mexican finances by treating in the following chapter of the expences of collection and the expences of government.

CHAPTER XIV.

Expences of Collection—Public Expenditure—Situados—Net produce which flows into the Royal Treasury of Madrid—Military State—Defence of the Country—Recapitulation.

In examining the different branches of the revenue of the state, we have indicated the expence of collection occasioned by the partial receipts. In all countries these expences vary according to the nature of impost or duty levied. We know from the researches of M. Necker*, that in France before the year 1784, the expence of collection amounted to 10½ per cent. of the whole imposts laid upon the people, while it cost more than 15 per cent. to collect the duties on consumption alone. From these proportions we may judge to a certain extent of the economy which prevails in the administration of the finances. The following table, drawn up from official papers, exhibits an afflicting result: it proves that the inhabitants of New Spain support burdens which surpass the net revenue of the state by more than a

* *Necker*, T. i. p. 93 and 188.

seventh. We shall first give this table, such as it was sent by the Count de Revillagigedo the viceroy, to the ministry at Madrid; and we shall afterwards discuss the results which may be drawn from it.

Classification of the Receipts. *(Ramos de real hacienda.)*	Gross produce in piastres.	Expence of collection and administration in piastres.	Net produce in piastres.
1st. Class, called *masa commun*: alcavala, Indian tribute, duties on gold and silver	10,747,878	1,395,862	9,352,016
2d. Class, called *masa remisible* a España: produce of the tobacco farm, of the sale of cards, and of mercury	6,899,830	3,080,303	3,819,527
3d. Class, called *destinos particulares*: Cruzada, tithes, medias anatas, mesadas, and other duties on the clergy	530,425	13,806	516,621
Agenos, revenue of the goods of corporations and pious foundations under the inspection of government	1,897,128	1,700,956	196,172
Total	20,075,261	6,190,927	13,884,336

The numbers in this Table relate to an average of the five years preceding 1789. In this period the revenue of New Spain did not exceed eighteen millions of piastres. The first class of imposts includes more than a half of the total receipts; and the expences of collection amount to 12 $\frac{8}{10}$ per cent. of the gross produce. The second class contains such branches as are the object of a particular monopoly, as the royal farm of tobacco, the sale of mercury and cards on account of the crown. With respect to this part of the public receipts the Table presents a result which does not appear accurate; for it states the expences of management and collection at 44 $\frac{6}{10}$ per cent. It is probable that the persons entrusted with drawing up this Table of the finances of Mexico, have confounded under this head the salaries of the officers, with the expences of manufactures and other unknown charges. We have already explained with the greatest minuteness, every thing connected with the tobacco management; we have seen that the salaries of the officers do not consume upon the whole more than 800,000 piastres in a gross produce of more than seven millions and a half of piastres. Adding to the salaries of officers a few expences of management disguised under the vague denomination of expences of administration, we may estimate the expence of collection at 25 per cent. The

economy introduced into the collection of taxes on the clergy form a singular contrast to the horrible depredation which takes place in the management of corporation property. I should be tempted to believe that in general the expence of collection in Mexico amounts to 16 or 18 per cent. of the gross receipts. The prodigious number of officers, the greatest idleness in those who fill the highest offices, the utmost complication in the administration of the finances, render the collection of taxes as slow and difficult as expensive to the Mexican public.

According to the Table of the finances drawn up by order of the Count de Revillagigedo, the expences of government were on an average between 1784 and 1789 as follows:—

Application of the revenue of the state.

	Piastres.
Situados sent to the colonies of America and Asia	3,011,664
Regular troops	1,339,458
Militia	169,140
Expence of keeping up *presidios*, or military posts	1,053,706
Food and clothing of condemned criminals	47,268
Arsenal and dockyard of the port of San Blas	93,004
Administration of justice	124,294
Administration of the finances	508,388
Pensions and other charges assigned on the *masa commun*	496,913
Missions of California and the North West coast of America	42,494
Various expences of fortifications, ships of war stationed at Vera Cruz, &c.	1,000,000
Total	7,886,329
Now the revenue of the three classes of imposts was according to the preceding Table	13,884,336
Remains, revenue of the king, which may be transmitted to the mother conntry	5,998,007

During the administration of the last viceroys Don Josef de Yturigarray, in the beginning of the year 1803, a new Table of the finance, was drawn up, of which the general result differs very little from that of the year 1790. The following is the detail of that *budget* in which the distribution of the different articles of the public expence leaves much to be desired with respect to order and perspicuity.

Budget of the public revenue of New Spain for the year 1803.

Application of receipts.	Piastres.	Piastres.
The *receipts* amount to	. . .	20,000,000
Expences.		
I. Expence of administration.		
Sueldos de hacienda, salaries of the viceroy, of the commandant general of the *provincias internas*, of the intendants, of the secretaries attached to the different chiefs, pensions of the governors retired from service (*jubilados*).	2,000,000	5,250,000
Expences of transmitting funds from province to province, and into Spain	750,000	
Purchase of raw materials for the tobacco, powder, and salt-petre farms, (*para especies estancadas*)	1,200,000	
Expence of the mint and of the powder, and tobacco manufactories	1,300,000	
Remains in net produce (*liquido*)		14,750,000

Application of receipts.	Piastres.	Piastres.
Remains in net produce (*liquido*) from the preceding page - - -	- - -	14,750,000
II. Charges of the *masa commun*.		
Military defence, ships, gun-boats, regular troops, militia, presidios, and criminals - - - - -	3,000,000	
Fortifications, arsenal and dockyards of San Blas, magazines, consumption of powder for the exercise of the troops - -	800,000	4,650,000
Expence of courts of justice (*audiencias*), missionaries, average -	250,000	
Pensions - - - - - -	200,000	
Hospitals and repairs of royal works - - -	400,000	
Remains in net produce (*liquido*)		10,100,000

Application of receipts.	Piastres.	Piastres.
Remains in net produce (*liquido*) from the preceding page - - -	- -	10,100,000
III. Remittances to the mother country and colonies (*cargas ultramarinas*).		
Net produce of the tobacco farm - - - - -	3,500,000	
Net produce of the sale of cards (*naypes*) - -	120,000	
Pensions assigned on the *ramos de vacantes*, the third part of which is sent to the establishment for the accommodation (*Mont de piete*) of the military at Madrid -	60,000	7,780,000
Purchase money of mercury in Germany -	500,000	
Produce of the *medias anatas* and other duties on the clergy, applied to the cannon foundry of Ximena - - -	100,000	
Situados of the colonies of Asia and America -	3,500,000	
Remains in the treasury of Mexico at the end of the year - - - - -		2,320,000

Application of receipts.	Piastres.	Piastres.
Sums sent to the Royal Treasury of Madrid.		
From the tobacco farm and cards - - - -	3,620,000	5,940,000
Surplus (*sobrante*) in the treasury of Mexico -	2,320,000	

To give a clearer idea of the situation of the finances of Mexico, I shall present at the close of the *budget* of the year 1803, a Table of the expences of state, as they are classed in a memoir drawn up by me in Spanish during my residence at Mexico, and communicated by the viceroy to the ministry at Madrid in 1804.

The revenue of New Spain, estimated at twenty millions of piastres is consumed,

I. By expences incurred in the interior of the kingdom, amounting to *ten millions and a half of piastres.*

II. By remittances of specie (*situados*) annually made to other Spanish colonies, amounting to *three millions and a half of piastres.*

III. By money paid, as the net produce of the colony, into the treasury of the king of Spain at Madrid, amounting to *six millions of piastres.*

I. The expences of internal administration, covered by the receipts of the *masa commun*, are divided as follows:

	Piastres.
1. War expences - -	4,000,000

Viz.

	Piastres.
Troops of the line (*tropa reglada*) -	1,800,000
Militia - - - - - -	350,000
Presidios - - - - -	1,200,000
Expence of the Fort of Perote -	200,000
Marine, dockyards of San Blas, arsenals of the ports - -	450,000
	4,000,000

The war expences in 1792 were calculated at 1,507,000 for the regular troops, 292,000 for the militia, and 1,079,000 for keeping up *presidios*.

2. Salaries of the viceroy, intendants, and officers employed in the administration of the finances -	2,000,000
3. Expences of administration of justice, *audiencias, salas del crimen, juzgados de penas de camara, juzgado de bienes de defuntos, juzgado de Indios* - - - - -	300,000
Carried forward	6,300,000

	Piastres.
Brought over - - -	6,300,000
4. Prisons, correction houses, hospitals	400,000
5. Pensions - - - -	250,000
6. Expences of administration, advances made to the tobacco farm, expences of the royal manufactories, purchase of raw materials, repairs of public buildings - -	3,550,000
	10,500,000

In Europe very exaggerated ideas are in general entertained of the power and wealth of the viceroys of Spanish America. This power and wealth have no existence, but when the person who fills the situation is supported by a great party at court, and where, by making a sacrifice of his honour to a sordid avarice, he abuses the prerogatives entrusted to him by the law. The salaries of the viceroys of New Grenada and Buenos Ayres, are only 40,000 piastres per annum*; and the viceroys of Peru and New Spain, have only 60,000†. At Mexico a viceroy finds himself surrounded by families, whose revenues are three or four times greater than his own; and his house is

* 8,400 Sterling. *Trans.*

† 12,600 Sterling. *Trans.*

on an establishment like that of the King of Spain. He cannot leave his palace without being preceded by his guards on horseback; he is served by pages; and in the town of Mexico he is only permitted to dine with his wife and children. This excess of etiquette becomes a means of saving; and a viceroy who wishes to quit his retirement and enjoy society, must remain for some time in the country, either at San Augustin de las Cuevas, or at Chapoltepec, or at Tacubaya. Some of the viceroys of New Spain have had an increase of salary; instead of 60,000 piastres, the Chevalier de Croix, Don Antonio Buccarelli, and the Marquis de Branciforte, had an annual revenue of 80,000 piastres*; but this court favour was not extended to the successors of the three above named viceroys.

A governor who chooses to renounce all delicacy of sentiment, and considers himself as having come to America for the purpose of enriching his family, finds means for accomplishing his end, by favouring the richest individuals of the country in the distribution of places, in the *dealing out* of the mercury, in privileges granted in time of war to carry on a free trade with the colonies of neutral powers. For some years past, the ministry of Madrid have deemed it for their interest to

* £16,800 Sterling. *Trans.*

name even to the smallest situations in the Colonies. However the recommendation of the viceroy is still of great importance to the person who solicits, especially if the object solicited be a military charge, or a title of nobility (*titulo de Castilla*), which the Spanish Americans are in general much more eager for, than the European Spaniards. A viceroy it is true has no right to make any commercial regulations, but he may *interpret* the orders of the court; he may open a door to neutrals, by informing the king of the *urgent circumstances* which have determined him to have recourse to that step; he may protest against a reiterated order, and accumulate memoirs and *informes*; and if he is rich, adroit, and supported in America by a courageous assessor, and at Madrid by powerful friends he may govern arbitrarily without fearing the *residencia*, that is to say the account which he must render of his administration to every superior (*Chef*) who has occupied a place in the Colonies.

There have been viceroys who secure of their impunity, have extorted in a few years nearly eight millions of livres tournois*; and with pleasure we add that there have been others who far from increasing their fortune by unlawful means, have displayed a noble and generous disinterestedness. Among the latter,

* Upwards of £326,000 Sterling. *Trans.*

the Mexicans will long remember with gratitude the Count de Revillagigedo, and the Chevalier d'Asanza, two statesmen equally distinguished for their private and their public virtues, whose administration would have been productive of still more good, if their exterior position had allowed them freely to follow the career which they had marked out.

II. Three millions and a half of piastres, nearly a sixth part of the whole revenue of Mexico, annually pass to the other Spanish Colonies, as an indispensable supply for their interior administration. These *situados* according to averages drawn from the years between 1788 and 1792, were distributed in the following manner:

	Piastres.	Piastres.
1. Island of Cuba - -		1,826,000
a. *Attencion de tierra,* aid to the internal government of the island -	436,000	
N. B. 146,000 piastres for Santiago de Cuba, and 290,000 piastres for the Havannah.		
b. *Attencion maritima,* marine expences -	740,000	
Carried forward	1,176,000	

	Piastres.	
Brought over -	1,176,000	
N. B. 700,000 piastres for the port and dockyards of the Havannah, and 40,000 piastres for the vessels stationed off the coasts of the Mosquitos		
c. Expence of keeping up the fortifications of the Havanah - -	150,000	
d. Purchase money of tobacco from the Island of Cuba, which goes into Spain - - -	500,000	
		1,826,000
2. Florida - - - -		151,000
3. Porto Rico - - -		377,000
4. The Philippine Islands - -		250,000
5. Louisiana - - - -		557,000
6. The Island of Trinidad -		200,000
7. The Spanish part of St. Domingo		274,000
		3,635,000

Although since the period when this table was drawn up, Spain has lost Louisiana, and the Islands of Trinidad and Saint Domingo, the situados have not been diminished to the amount of 1,031,000 piastres, as might be sup-

posed. The administration of the Philippine Islands, Cuba, and Porto Rico, has been so expensive during the last war, especially from the squadrons stationed there under admirals Alava and Aristizabal, that the sum sent to the eastern and western Colonies, has never been less than three millions of piastres. We cannot help being surprized to see that the Havanah requires an assistance of 1,400,000 piastres, when we recollect that the receivers of *royal duties* pay into the treasury of the Colony, more than two millions of piastres per annum. Although in the Philippine Islands, the *tribute* on the natives amounts to 573,000 piastres, and the excise on tobacco to 600,000 piastres, the royal treasuries of Manilla, have constantly required of late, a *situado* of 500,000 piastres.

III. The net revenue *(sobrante, liquido remisible)*, drawn by the Mother Country from Mexico, scarcely amounted to a million of piastres before the introduction of the tobacco farm. At present it amounts to five or six millions of piastres, according as greater or smaller *situados* are required by the other Colonies. This *liquido* or *sobrante* is composed of the net produce of the tobacco and powder farms, which pretty uniformly amounts to three millions and a half of piastres, and the variable surplus of the *masa commun*. I must observe that in the

Spanish Colonies, little or no money remains in the treasury, after the accounts of the year have been closed. Those who govern, are aware that the surest means of supporting their credit at court, and preserving their places, is to send as much money as possible to the royal treasury at Madrid.

As the greater part of the population of New Spain, is concentrated in the five intendancies of Mexico, Guanaxuato, Puebla, Valladolid, and Guadalaxara, these provinces bear the greatest part of the burdens of the state. The *provincias internas* may be considered as Colonies of Mexico, properly so called; but these colonies far from supplying funds to the treasury of the capital, are a drawback on that treasury. The *receipts* of the provincial treasury (*caxa real*) of Guanaxuato, were on an average, of the five years preceding 1793.

	Piastres.
Duty* on gold and silver, and alcavala - - - -	850,000
Produce of tobacco, powder, and stamps - -	312,000
Total	1,162,000

* Nothing more is meant here than the duty itself; for the quantity of silver which passes through the provincial treasury of Guanaxuato, is more than from six to seven millions of piastres, the whole produce of the mines flowing through that channel to the mint at Mexico.

The annual *expences* are:

	Piastres.
Salary of the intendant - -	6000
Expence of administration of the treasury	7800
Assay of gold and silver - -	5600
Expence of collection of the alcavala and duty on pulque - -	8000
Salaries of guards (*Risguardo*) -	10,700
Total	39,600

From the table of the expences of Guanaxuato, we may form some idea of the situation of the finances in the twelve other intendancies of which the kingdom of New Spain is composed. At Valladolid the revenues at present amount to 773,000 piastres, and this account is probably more accurate than that of the revenue of the intendancy of Guanaxuato, which appears somewhat too low.

The profit derived by the government of Spain from Mexico, amounts to more than two thirds of the net produce of the Spanish Colonies, in America and Asia. The greatest part of the authors on political economy, who have treated of the finances of the peninsula, the liquidation of the *vales*, and of the bank of Saint Charles, found their calculations on the falsest data, by exaggerating the treasures which the court of Spain annually derives from its American possessions. These trea-

sures, in the most abundant years, never exceeded the sum of nine millions of piastres. When we consider that the ordinary expences of state in European Spain, since 1784, have been from thirty-five to forty millions of piastres, we find that the money sent by the colonies to the treasury of Madrid, does not amount to more than a fifth part of the total revenue. It might be easy to prove, that if Mexico enjoyed a wise administration; if it opened its ports to every friendly nation; if it received Chinese and Malay colonists to people its western coast, from Acapulco to Colima; if it increased, the plantations of cotton, coffee, and sugar; and finally if it established a just balance, between its agriculture, its mines, and its manufacturing industry, it might alone, in a very few years afford the crown of Spain a net profit, double the amount of what is at present furnished by the whole of Spanish America.

The following is a general table of the finances of the colonies, with respect to the net revenue immediately derived from them by the Mother Country:—

The royal treasury receives from the viceroyalty of *New Spain*, from five to six millions of piastres* per annum.

* £1,890,000 Sterling. *Trans.*

From the viceroyalty of *Peru*, more than a million of piastres;

From the viceroyalty of *Buenos Ayres*, from six to seven hundred thousand piastres;

From the Viceroyalty of *New Grenada*, from four to five hundred thousand piastres;

In the *Capitanias generales* of *Caracas*, *Chili*, *Guatimala*, the island of *Cuba*, and *Portorico*, the receipts are consumed by the expences of administration; and it is the same with the Philippine and Canary Islands.

Hence, all the colonies, only produce to the treasury of Spain, eight millions, two hundred thousand piastres per annum, at an average. Considering the colonies merely as distant provinces, we find that the revenue of the European part of the Spanish monarchy, hardly equals that of the American part.

Finances, of the Spanish Monarchy, in 1804.

EUROPE.—Peninsula: gross revenue, thirty-five millions of piastres. The total receipt in 1784, was 685,000,000 reals de Vellon; in 1788 it was 616,295,000 reals, according to the account rendered by Lerena. Population 10,400,000 inhabitants. Surface 25,000 square leagues.

AMERICA.—From the researches made by me, respecting the state of the finances of

the colonies, it appears to me, that we may estimate the gross revenue of all Spanish America, at 36,000,000 of piastres. The population of Spanish America, is nearly 15,000,000 inhabitants; its surface 468,000 square leagues. The colonies of which we can specify the gross revenue with any degree of certainty, are the following:

Viceroyalty of New Spain, twenty millions of piastres;

Viceroyalty of Peru, four millions of piastres;

Viceroyalty of New Grenada, three millions eight hundred thousand piastres;

Capitania general de Caracas, one million eight hundred thousand piastres;

Capitania general of Havanah, the island of Cuba, without the Floridas, two millions three hundred thousand piastres. The annual situado from Mexico, is not included in this calculation.

ASIA.—Phillippine islands: gross revenue without including the *situado* from Acapulco, one million seven hundred thousand piastres. Population, including only the subjected Indians in the island of Luçon and the Bisayes, 1,900,000 inhabitants; surface, 14,640 square leagues.

AFRICA.—Canary islands, annexed to Andalusia; gross revenue, including the produce

of the tobacco farm, but not the supplies from Spain, nearly two hundred and forty thousand piastres. Population, 180,000 inhabitants; surface, 421 square leagues.

Of these *thirty-eight millions of piastres*, which the gross revenue of the *Spanish colonies in America, Asia, and Africa*, amounts to, we may consider eight millions and a half as profits of coinage, and duties levied on the produce of the gold and silver mines; nine millions as the revenue of the tobacco farm; and twenty millions and a half as the produce of the alcavala, almoxarifazgo, Indian tribute, proceeds of powder, brandy, and cards, and other duties on consumption. The interior administration of the colonies, consumes *thirty-one millions of piastres* per annum; and as we have already observed, nearly *eight millions** flow into the royal treasury of Madrid. We know that the last sum added to the thirty-five millions of piastres, raised from European Spain, has, for a long time past, been insufficient to support the civil and military expences of the Mother Country.

* In the account of the general revenue of Spain for 1801, which I procured in America, and which amounts to 800,488,687 reals of Vellon, the revenues of the Indies are estimated at 142,456,768 reals, or at 7,122,838 piastres.

The public debt of Spain* has risen by degrees to more than a hundred and twenty millions of piastres†; and the annual *deficit* has been the more considerable, as commerce and industry have been cramped by maritime wars. Besides, when we compare the gross revenue with the state of the population as we have stated it above, we shall soon be convinced that the charges supported by the inhabitants of the

* There were in 1805, *vales*, or royal obligations, for the sum of 1750 millions of reals de Vellon. There is nothing formidable in the debt of Spain, when we reflect on the immense resources of that monarchy, which includes the finest parts of the globe in both hemispheres. The public debt of France before the revolution amounted to 1100 millions of piastres; and that of Great Britain, at present probably exceeds 2821 millions of piastres. In 1796 the sum of *assignats* in circulation in France, amounted to 45,578,000,000 francs or 8681 millions of piastres (1822 millions Sterling. *Trans.*); but on their losing their authority (*demonetisation*) 100 francs of assignats were only equal to 3 sous, 6 deniers in specie; and according to M. Ramel, there remained in circulation, the sum of 6254 millions of piastres, which were never withdrawn. As to the *mandats* and *rescriptions*, they were issued to the amount of 4800 piastres. These sums must appear the greater, as we have already demonstrated that not more than 1637 millions of piastres exist in Europe, and that the whole quantity of gold and silver extracted from the mines of America, since 1492, does not amount to more than 5706 millions of piastres.

† Upwards of 25 millions Sterling. *Trans.*

colonies are one third less than those laid on the people of the Peninsula.

At the period of the great catastrophe, by which England lost nearly the whole of her continental possessions in America, several political writers examined the influence which the separation of the Spanish colonies, would directly have on the finances of the court of Madrid. The statements which we have given respecting the general situation of the finances of Spain, in 1804, enable us to furnish some data for the solution of this important problem. If the whole of Spanish America had declared itself independent, at the period of the revolt of the Inca Tupac-Amaru*; this event alone would have produced several effects: 1st. It would have deprived the royal treasury of Madrid, of an annual receipt of from eight to nine millions of piastres, of net revenue *(liquido remisible)* of the colonies; 2dly, It would have produced a considerable diminution of the commerce of the Peninsula, because the Spanish American, freed from the monopoly which the Mother Country has exercised for three hundred years, would have drawn directly the foreign goods which he wanted, from countries not subject to Spain; 3dly. This change of the direction of the com-

* See vol. i. p. 200.

merce of the colonies, would have occasioned a diminution of the *duties* levied in the custom-houses of the Peninsula, estimated at five millions of piastres; 4thly, The separation of the colonies would have ruined several Spanish manufactures, which are mostly supported by the forced sale which they find in America, being unable, in their present state, to stand in competition, with the goods of India, France, or England. These effects, which would have been very sensibly felt at first, would have been gradually compensated by the advantages arising from the concentration of moral and physical force, from the necessity of a better system of agriculture, and from the natural equilibrium between nations, united by the ties of blood, and the exchange of productions, which the habit of several centuries has rendered necessary. But it would be wandering from our principal subject, to enter upon a discussion, which, at the period of the peace of Versailles, was thoroughly examined in several works of political economy. When we compare the extent, population, and revenue of Spanish America, with the extent, population, and revenue of the English possessions in India, we find the following results:

	Spanish America	English possessions in Asia*.
Extent in square leagues of 25 to the equatorial degree	460,000	48,300
Population - -	15,000,000	32,000,000
Gross revenue in piastres - - -	38,000,000	43,000,000
Net revenue in piastres - - -	8,000,000	3,400,000

From this table it appears, that New Spain, the population of which does not amount to six millions, contributes to the treasury of the king of Spain, twice as much net revenue as Great Britain draws from her fine possessions in India, which contain five times the number of inhabitants of the former. It would be unfair, however, when we compare

* Territory of which the English company has acquired the sovereignty, not including the allies and tributaries, such as the Nizam, and the princes of Oude, the Carnatic, Mysore, Cochin, and Travancore. According to M. Playfair, whom I followed in the table published in vol. i. chap. viii. the population only amounts to twenty-three millions and half. The motives which have induced me to follow other data at present, are explained in note I. at the end of the work.

the gross revenue* with the number of inhabitants to conclude, from this comparison, that the Hindoos support smaller burdens than the Americans. We must not forget that the price of labour in Mexico, is five times greater than in Bengal, or to use a word consecrated by a celebrated man†, in Hindostan, the same quantity of money, *commands* five times more labour than in America.

When we turn to the *budget* of expences of state, we find with surprise, that in New Spain, which has hardly any other neighbours to fear but a few warlike tribes of Indians, the military defence of the country consumes nearly a fourth part of the whole revenue. It is true the number of troops of the line, only amounts to nine or ten thousand; but when we add the militias called *provinciales* and *urbanas*, we find an army of 32,000 men distributed over an extent of country, of six hundred leagues in length. We shall here examine a few of those *states* annually presented to the court of Madrid, since the Counts de Galvez and Revillagigedo, and the Marquis de Branciforte thought proper to in-

* *Revenue of British India* (*in the year* 1801) £9,742,937 sterling; charges, £8,961,180; net revenue, £781,757. *Playfair stat. Breviary.* p. 59.

† Adam Smith.

crease the militia corps. The following table explains in the greatest detail, the heterogeneous elements, of which the military of Mexico, and the *provincias internas* is composed.

I. General Table of the army in 1804.

Denomination of Corps.	Men.	Men.
I. Regular Troops (*Tropas veteranas*)		9,919
1. In Mexico proper - -	6,225	
2. In the *provincias internas* administered by the Viceroy of Mexico - - - - -	595	
3. In the *provincias internas* administered by commandant generals - - - -	3,099	
	9,919	
II. Militia (*cuerpos de milicias*)		22,277
1. Provincial militia (*provinciales*)	21,218	
In the Viceroyalty	18,631	
Viz. In the *provincias internas* - -	2587	
2. Militia of towns (*urbanas*)	1059	
	22,277	
Total in a time of peace not including the peninsula of Yucatan and Guatimala - - - -		32,196

II. Table exhibiting in detail the distribution of the regular troops.

Denomination of Corps.	Men.
A. Regular troops distributed in Mexico proper - - - - -	6225
a. Infantry - - - - - 5260	
Guard of the Viceroy, created in 1588 (*alabarderos*) - - - -	25
Four regiments: *Fixo de la Corona, Nueva España, Mexico,* and *Puebla:* the three latter raised in 1788 and 1789: the whole are composed of 14 companies: in each regiment 979 men - - -	3916
Battalion of Vera Cruz of five companies raised in 1793 - -	502
Artillery corps of three companies of 125 men each - - - -	375
Engineer corps eight officers	
Volontarios de Cataluña, two companies created in 1762 - - -	160
Company of Acapulco, created in 1773 - - - - - -	77
Company of the Presidio of the Isla del Carmen, created in 1773	100
Company of San Blas created in 1788	105
Carried forward	5260

Continuation of Table II.

Denomination of Corps.	Mn.
Brought over	5260
b. Cavalry	965
Four squadrons of *Dragones de España*, created in 1764	461
Four squadrons of *Dragones de Mexico* created in 1765	461
Dragoons of the Presidio del Carmen	43
	6225
B. Regular troops contained in the part of the Provincias internas under the administration of the Viceroy of Mexico, (*compañias presidiales y volantes*)	595
a. In old and new California Presidio de Nuestra Señora de Loreto, formed in 1720	47
of San Carlos de Monterey formed in 1770	61
of San Diego formed in 1770	59
of San Francisco formed in 1776	38
of the channel of Santa Barbara formed in 1788	65
Carried forward	270 6820

Continuation of Table II.

Denomination of Corps		Men.
Brought over	270	6,820
b. In the kingdom of Leon Military post (*presidio*) of San Juan Bautista de la Punta de Lampazos established in 1781 - -	100	
b. In the province (*colonia*) of New Santander		
Three companies of *Volantes* formed in 1783 - -	225	
C. Regular Troops distributed in the part of the *provincios internas* which is administered by two commandant generals - - -		3099
Total of Regular Troops - -		9919

III. Table exhibiting in detail the distribution of the Militia.

Denomination of Corps.		Men.
A. Provincial Militia (*milicias provinciales*)		21,218
a. Of the Viceroyalty of Mexico	18,631	
1. Infantry	7,249	
Seven regiments: *Mexico, Puebla Tlascala, Cordoba, Orizaba y Xalalapa, Toluca, Valladolid and Celaya*, of two battalions or 10 companies created in 1788; each regiment 825 men in time of peace, and 1350 in time of war	5775	
Three battalions: *Guanaxuato, Oaxaca*, and *Guadalaxara*, of five companies; 412 men in time of peace and 675 men in time of war	1236	
Two companies of men of colour (*pardos y morenos*) of Vera Cruz, each company containing 119 men	238	
2. Cavalry	4592	
Eight regiments of Dragoons: *Santiago de Queretaro, Principe, Puebla, San Luis, San Carlos, la Reyna, Nueva Galicia* and *Mechoacan*, created in 1788: each regiment containing four squadrons in time of peace 361 strong, and in time of war 617	2888	
Carried forward	10,137	21,218

Continuation of Table III.

Denomination of Corps.	Men.	
Brought over	10,137	21,218
Six squadrons of lancers of Vera Cruz, created in 1767 - -	384	
Three corps distributed over the frontiers (*cuerpos fixos de frontera, en lo interior del reyno*), 1320 viz.		
Four companies of *Sierra Gorda*, created in 1740 - - -	240	
Nine companies of *San Luis Colotlan* created in 1780 - -	720	
Six companies of *Nuevo Santander*, created 1792 - - -	360	
3. Mixed troops of foot and lancers, whites and men of colour, (*compañias fixas de blancos y pardos*) distributed on the eastern and western coasts, and formed in 1793 total force - - -	6790	
Division of the north (Atlantic coast) twenty two companies		
First Division - -	400	
Second Division - -	670	
Third Division - -	760	
Fourth Division - -	500	
Ten companies of Tabasco	910	
	15,081	21218

Continuation of Table III.

Denomination of Corps.		Men.
Brought over.	15,081	21,218
Divisions of the South (South-Sea coast) thirty-four companies		
First Division	680	
Second Division	1140	
Third Division	300	
Fourth Division	1030	
Fifth Division	409	
b. Of the *provincias internas* fourteen squadrons or 48 companies	2,587	
B. Town Militia (*milicias urbanas*)		1,059
Commercial regiment of Mexico, ten companies, created in 1693		702
Commercial battalion of Puebla, four companies created in 1789		228
Squadron of cavalry of Mexico, created in 1787		129
Total of Militia in time of peace		22,277

We have not included in these tables, the corps of invalids formed in 1774, consisting of two companies, nor the troops distributed in the intendancy of Merida, and commanded

by the captain general of the peninsula of Yucatan. I was unable to procure the state of the military force of that peninsula. There are eight companies of regular troops *(tropas veteranas)* at Campeche, and in the small fort of San Felipe de Bacalar; and the defence of Merida is entrusted to militia, composed of whites and men of colour.

The cavalry is extremely numerous in the Mexican army, forming almost the half of the total force. In 1804 there were

	Men.	Men.	Men.
In Infantry			16,200
1. Regular troops		5,200	
2. Militia		11,000	
In Cavalry			16,000
1. Regular troops		4,700	
a. In Mexico	1,000		
b. In the *provincias internas*	3,700		
2. Militia		11,000	
a. In the interior of Mexico	4,700		
b. On the coast	4,000		
c. In the *provincias internas*	2,600		
Total *			32,200

* A state of troops preserved in the archives of the Viceroyalty, and tolerably conform to the *Guia de fo-*

In estimating the force of the Mexican army at 32,000 men, we must observe that the number of disciplined troops scarcely amounts to eight or ten thousand, among whom there are three or four thousand of considerable military experience, namely the cavalry stationed in the presidios of Sonora, New Biscay, and New Galicia. We have already observed * that the inhabitants of the *provincias internas* live in a state of perpetual warfare with the Indians known by the name of Apaches, Cumanches, Mimbreños, Yutas, Chichimecas, and Taouaiazes. The *presidios* or military posts were established to protect the colonists from the attacks of these Indians, who are armed with bows and arrows, and mounted on horses of the Spanish breed. Since the end of the sixteenth century when Juan de Oñate formed the first settlements in New Mexico, horses have multiplied to such a degree in the Savannahs which extend to the East and West of Santa Fe, towards the Missouri and the Rio Gila, that the

vasteros, published at Mexico by *Don Mariano de Zuñiga y Ontiveros* (p. 152, 179,) gives 32,934. Compare also *Viagero Universal*, xxvii. p. 320 and the *New Geography of M. Pinkerton*, p. 162, in which a larger estimate has been adopted.

* See Vol. ii. p. 313.

Indians are not only accustomed to live on their flesh, when in want of the buffalo, but they also use them in their warlike excursions. In the same manner as maize is cultivated by several African tribes who are totally ignorant of the manner in which they acquired that plant, the horse is at present found in a domestic state to the north of the sources of the Missouri among several Indian tribes who never before the expedition of Captain Clarke, had had any communication with the whites. Fortunately for the colonists of Sonora and New Mexico, the use of fire arms, so common among the savages of eastern Canada, has not yet spread among the Indians in the neighbourhood of the Rio del Norte.

The Mexican troop of the presidios is exposed to continual fatigues. The soldiers of which it is composed are all natives of the northern part of Mexico. They are tall and very robust mountaineers, equally accustomed to the rigors of winter, and the heat of the sun in summer. Constantly under arms, they pass their lives on horseback, and perform marches of eight or ten days through deserts, with no other provisions than the flour of maize, which they mix with water when they come to a spring or a marsh on

the road. I have been assured by intelligent officers, that it would be difficult to find in Europe a troop of greater activity in its motions, more impetuous in battle, and more accustomed to privations than the cavalry of the presidios. If this cavalry cannot always prevent the incursions of the Indians, it is because they have to do with an enemy who with the utmost address know how to avail themselves of the smallest inequalities of ground, and who have been accustomed for ages to all the stratagems of petty warfare.

The provincial militia of New Spain, of which the force amounts to more than twenty thousand men, is better armed than that of Peru, which for want of fire arms is in part obliged to exercise with wooden muskets. The formation of militia in the Spanish Colonies is not owing to the military spirit of the nation, but to the vanity of a small number of families, the heads of which aspire to the titles of Colonels and Brigadiers. The distribution of patents and military rank has become a fertile source of revenue, not so much to the government as to those administrators who possess great influence with the ministry. The rage for titles, by which the beginning and decline of civilization is every where characterised, has rendered this traffic extremely

lucrative. In travelling over the chain of the Andes, one is surprized to see on the ridge of the mountains, in small provincial towns all the merchants transformed into colonels, captains, and serjeant majors of militia. As the rank of colonel gives the *tratamiento*, or the title of *Señoria**, which is repeated incessantly in familiar conversation, we may conceive that it contributes the more to the happiness of domestic life, and the creoles make the greatest sacrifices of fortune to obtain it. Sometimes these militia officers are to be seen in full uniform, and decorated with the royal order of Charles III., gravely sitting in their shops, and entering into the most trifling detail in the sale of their goods. They display a singular mixture of ostentation and simplicity of manners, at which the European traveller is not a little astonished.

Till the period of the independence of the United States of North America, the Spanish government never thought of increasing the number of troops in the Colonies. The first colonists in the New Continent were soldiers; the first generations knew no profession more honourable and lucrative than that of arms; and from this military enthusiasm, the Spaniards displayed an energy of character, inferior to

* La Senoria, V. S., vulgarly *ussia*.

nothing in the history of the crusades. When the subjected Indian bore with patience the yoke imposed on him, and when they became tranquil possessors of the treasures of Peru and Mexico, the colonists were no longer tempted by new conquests, and the warlike spirit insensibly declined. From that period, a peaceful rural life was preferred to the tumult of arms; the fertility of the soil, the abundance of subsistence, and the beauty of the climate, contributed to soften the manners of the people; and the same countries which in the first part of the sixteenth century, presented nothing but the afflicting spectacle of wars and pillage, enjoyed under the Spanish dominion a peace of two centuries and a half.

The internal tranquillity of Mexico has been rarely disturbed since the year 1596, when, under the viceroyship of the Count de Monterey, the power of the Castillians was secured from the peninsula of Yucatan, and the gulph of Tehuantepec, to the sources of the Rio del Norte, to the coast of New California. Disturbances among the Indians took place in 1601, 1609, 1624, and 1692; in the last of these commotions, the palace of the viceroy, the residence of the mayor, and the public prisons, were burned by the Indians; and the Count de Galve * the viceroy, found security

* *Don Gaspar de Sandoval, Conde de Galve.*

only in the protection of the monks of Saint Francis. Notwithstanding these disturbances occasioned by the want of subsistence, the Court of Madrid did not think it necessary to increase the military force of New Spain. In those times, when the union was closer between the Mexican and European Spaniards, the suspicions of the Mother Country were solely directed against the Indians and mestizoes. The number of white creoles was so small, that on that very account, they were generally induced to make a common cause with the Europeans. To that state of things we are to attribute the tranquillity of the Spanish Colonies, at the period when the possession of Spain was disputed by foreign princes on the death of Charles the Second. The Mexicans, governed at that period, first by a descendant of Montezuma, and afterwards by an Archbishop of Mechoacan, remained tranquil spectators of the great struggle between the houses of France and Austria; the Colonies patiently followed the fortune of the Mother Country; and the successors of Philip the Fifth, only began to dread the spirit of independence, which was manifested in New England in 1643*, when a great confederation of free states was formed in North America.

* Robertson, Vol. iv. p. 307.

These fears of the Court were still farther increased, when a few years before the peace of Versailles, Gabriel Condorcanqui the son of the Cacique of Tongasuca, better known under the name of Tupac-Amaru, stirred up the Indians of Peru, to re-establish at Cuzco the antient empire of the Incas. This civil war during which the Indians committed the most atrocious cruelties, lasted nearly two years; and if the Spaniards had lost the battle in the province of Tinta, the bold undertaking of Tupac-Amaru might have had fatal consequences, not only for the interests of the Mother Country, but perhaps also for the existence of all the whites settled on the table lands of the Cordilleras, and the neighbouring vallies. However extraordinary this event may have been, its causes were in no degree connected with the movements which the progress of civilization, and the desire of a free government, gave rise to in the English Colonies. Cut off from the rest of the world, and carrying on no commerce but with the ports of the Mother Country, Peru and Mexico did not then enter into the ideas which agitated the inhabitants of New England.

Within these twenty years, the Spanish and Portuguese settlements of the New Continent, have experienced considerable changes in their moral and political state; and the want of in-

struction and information, has begun to be felt with the increasing population and prosperity. The freedom of trade with neutrals, which the Court of Madrid, yielding to imperious circumstances, has from time to time, granted to the Island of Cuba, the coast of Caracas, the ports of Vera Cruz and Monte Video, has brought the colonists into contact with the Anglo-Americans, the French, the English, and the Danes; the colonists have formed the most correct ideas respecting the state of Spain, compared with the other powers of Europe; and the American youth, sacrificing part of their national prejudices, have formed a marked predilection for those nations, whose cultivation is farther advanced than that of the European Spaniards. In these circumstances, we are not to be astonished, that the political movements which have taken place in Europe since 1789, have excited the liveliest interest among a people who have long been aspiring to rights, the privation of which is both an obstacle to the public prosperity, and a motive of resentment against the Mother Country.

This disposition of the minds of men, induced the viceroys and governors in some provinces to have recourse to measures, which far from quieting the agitation of the Colonists, contributed to increase their discontent. The germ of revolt was believed to be discovered

in every association, which had the public illumination for its object. The establishment of presses was prohibited in towns of forty and fifty thousand inhabitants; and peaceful citizens, who in a country retirement read in secret the works of Montesquieu, Robertson, or Rousseau, were considered as possessed of revolutionary ideas. When the war broke out between France and Spain, unfortunate Frenchmen who had been settled in Mexico for twenty and thirty years, were dragged to prison. One of them dreading a renewal of the barbarous spectacle of an *auto-da-fe*, put an end to his life in the prisons of the Inquisition; and his body was burned on the place of the Quemadero. At the same period, the government imagined they had discovered a conspiracy at Santa Fe, the capital of the kingdom of New Grenada; and individuals who had by the way of trade with Saint Domingo procured French journals, were thrown into chains. Young people of 16 years of age were put to the torture, to extort from them secrets of which they had no knowledge.

In the midst of these agitations, magistrates of respectability, and it is pleasant to dwell on the circumstance, even Europeans raised their voices against these acts of injustice and violence. They represented to the court, that a distrustful policy merely irritated men's minds,

and that it was not by force, and by increasing the number of the troops composed of natives, but by governing with equity, by perfecting the social institutions, by granting the just demands of the Colonists, that they might long hope to draw the ties closer between the Colonies, and the peninsula of Spain. These salutary advices were not followed; the colonial system of government underwent no reform; and in 1796, in a country where the progress of knowledge was favoured by frequent communications, with the United States, and the foreign West India Colonies, a great revolutionary commotion very nearly annihilated at a single blow the Spanish domination. Don Josef España, a rich merchant of Caracas, and Don Manuel Wal, an officer of engineers, residing at Guayra, conceived the bold project of establishing the independence of the province of Venezuela, and uniting to it the provinces of New Andalusia, New Barcelona, Maracaybo, Coro, Varinas, and Guayana, under the name of the United States of South America*. The consequences of this unsuccessful revolution are described by M. Depons, in his travels in Terra Firma†. The confederates were arrested before the general insurrection could take place; España

* *Las siete provincias unidas de la America meridional.*

† T. i. p. 228—233.

brought to the scaffold, saw his end approach with the courage of a man capable of great designs; and Wal died in the Island of Trinidad, where he found an asylum, but no assistance.

Notwithstanding the tranquility of character, and extreme docility of the people in the Spanish Colonies, and notwithstanding the particular situation of the inhabitants who are dispersed over a vast extent of country, and in the enjoyment of that individual liberty which always accompanies a life of solitude, political agitations would have been more frequent since the peace of Versailles, and especially since 1789, if the mutual hatred of the casts, and the dread which the whites and the whole body of freemen entertain of the great number of blacks and Indians, had not arrested the effects of popular discontent. These motives as we have explained in the beginning of this work*, have become still more painful since the events which have taken place in Saint Domingo; and it cannot be doubted that they have contributed more to preserve tranquillity in the Spanish Colonies, than the rigorous measures adopted, and the formation of militias, of which the number amounts in Peru to more than forty thousand men, and in the

* Vol. i. Chap. i.

Island of Cuba to twenty-four thousand*. This

* I shall state in this note what information I could procure, respecting the number of troops in the Spanish Colonies. When I was last at the Havanah in spring 1804, there were under arms in the Island of Cuba;

	Men.
I. Disciplined Militia: infantry.	
At the Havanah	1,442
At the Villa de Puerto del Principe	721
II. Disciplined Militia: cavalry	
At the Havanah, and in its jurisdiction	517
III. Country Militia: undisciplined *(milicias rurales)*	
To the east of the Havanah, and at Matanzas	7,995
To the west of the Havanah	5,688
In the suburbs *(extra muros)* of the Havanah	1,368
In the jurisdiction of the four towns *(las quatro villas)*	2,640
In that of the Puerto del Principe	1,728
In that of Santiago de Cuba	2,412
Total force	24,511

It appears certain that the Island of Cuba could possess for its defence, a body of 36,000 whites, from the age of 16 to 45 (See above Vol. i. Chap. vii. p. 208). The armed force of the Island of Cuba is much superior to that of the *capitania general* de Caracas, which only amounts in the provinces of Venezuela, Nueva Andalusia, or Cumana, Maracaybo, Guayana, and Varinas, to 11,900 men, among whom there are not 2500 Europeans. In Peru there were in 1794:

	Men.
In Regular Troops.	12,000
In Militia of which $\frac{1}{4}$ Cavalry	49,000
	61,000

increase of armed force points out more clearly the increasing distrust of the Mother Country, as on the Caracas coast, there were no regular troops previous to the year 1768, and in the kingdom of Santa Fe, for more than two centuries and a half, the government never found any occasion for militia, which were first levied in 1781, when the introduction of the tobacco farm, and the duties on brandy gave rise to popular commotions.

In the present state of things, the external defence of New Spain can have no other aim than to preserve the country from any invasion which a maritime power might attempt. Arid savannahs resembling the deserts of Tartary, separate the *provincias internas* from the territory of the United States. It is but lately

This list is taken from the court calendar, or *Guia politica de Lima*, published by order of the Viceroy. We have already observed that a part of these militia, armed with wooden muskets, is not very formidable. In the kingdom of New Grenada, there were in 1796, according to official papers in my possession, 3600 regular troops, stationed at Santa Fe de Bogota, Carthagena, Santa Martha, in the isthmus of Panama, at Popayan and Quito, and 8400 militia. In the Philippine Islands according to M. de Sainte Croix, there are 5500 regular troops, and 12,200 militia. Resuming all that I have procured respecting the Spanish Colonies of America, it appears that in a total population of fourteen or fifteen millions of inhabitants, they contain 3,000,000 of whites, 300,000 Europeans, and at most 26,000 European troops.

that the inhabitants of Louisiana, have been able to penetrate by the Missouri, and the river Plata, to the town of Santa Fe of New Mexico. The Arkansas and the red river of Natchitoches, which flow into the Mississippi, rise it is true in the mountains in the neighbourhood of Taos; but the difficulty of ascending these rivers is so great, on account of the rapidity of the current, that the northern provinces of Mexico are as secure against attack from this quarter, as the United States and New Grenada are from the Ohio, and the river Magdalen.

Beyond the 32° of north latitude, the nature of the soil, and the extent of the deserts in the neighbourhood of New Mexico, afford the inhabitants a constant security from the attack of a foreign enemy. Farther south, between the Rio del Norte, and the Mississippi, several lines of rivers appear on the same frontier; and it is in this part of the country, that the colonists of Louisiana approach the nearest to the Mexican colonists; for the distance is only sixty leagues from fort Clayborn, in the county of Natchitoches, to the Mexican *presidio* of Nacogdoch. In this part of the intendancy of Potosi the ground along the coast is marshy; the surface only rises towards the north and north east; and in the midst of the plains which join the basin of the north river, to that

of the Mississippi, the Rio Colorado de Texas appears to afford the most advantageous military position. This point is the more remarkable, as between the mouth of the Colorado, and the small port of Galveston, M. de Salle founded towards the end of the 17th century, the first French colony of Louisiana. It would be useless to enlarge here on the defence of the frontiers in the *provincias internas*; for the principles of wisdom and moderation by which the government of the United States is animated, lead us to hope that a friendly arrangement will soon fix the limits between two nations, who both possess more ground than they can possibly cultivate.

The petty warfare carried on incessantly by the troops stationed in the *presidios**, with the

* The following are the military posts *(presidios)* of Mexico.

1. Intendancy of Durango:

Conchos, Yanos, Gallo, S. Buenaventura, Carizal, S. Eleazario, Norte, or *las Juntas, Principe, S. Carlos, Cerro Gordo, Pasage,* Namiquipa, *Coyame, Mapimis, Huejoquilla,* Julimes, S. Geronimo, S. Eulalia, Batopilas, Loreto, Guainopa, Cosiquiriachi, Topago, S. Juaquin, Higuera, S. Juan, Tababueto, Reyes, Coneto, *Texame,* Sianuri, Ynde, Oro, Tablas, Caneza, Panuco, Avino.

2. Intendancy of Sonora:

Bavispe, Buenavista, Pitic, Bacuachi, *Tubson, Fronteras, S. Cruz, Altar,* Rosario.

wandering Indians, is equally burdensome to the public treasury, and inimical to the progress of civilization among the Indians. Not having ever travelled in the *provincias internas*, I cannot take upon me to say whether or not a general pacification is practicable. We frequently hear at Mexico, that for the security of the colonists, the tribes of savages who wander about in the Bolson de Mapimi, and to the north of New Biscay, ought not to be repulsed, but exterminated. Fortunately however, this barbarous counsel has never yet been listened to by the government, and we learn from history, that such measures are not necessary. In the 17th century, the Apaches, and the Cicimeques, carried their incursions beyond Zacatecas, towards Guanaxuato, and the Villa de Leon, but since the increase of civilization in these countries, the tribes of Indians

3. New Mexico:

Santa Fe, Passo del Norte.

4. Californias:

San Diego, Santa Barbara, *Monterey, San Francisco.*

5. Intendancy of San Luis Potosi:

Nacogdoch, *Espiritu Santo, Bejar, Cohahiula*, San Juan Bautista del Rio Grande, Aquaverde, Bavia.

The *presidios* which have the strongest garrisons, are in italics. None of these posts contain more than 140 soldiers.

have gradually withdrawn to a distance. It is to be hoped in the same manner, that in proportion as the population and public prosperity shall increase in the *provincias internas*, these warlike hordes will retire, first, behind the Gila, next to the west of the Rio de Colorado, which flows into the sea of Cortez; and lastly into the northern and desert regions, in the neighbourhood of the mountains of New California. This last province, of which the shore alone is inhabited, is yet six hundred leagues distant from Russian America, and more than two hundred from the mouth of the Rio Colombia, where the inhabitants of the United States have projected the formation of a colony. The defence of the ports of San Francisco, Monterey, and San Diego, is entrusted to a body of not more than 200 men, and there are not above three guns in San Francisco; but these forces have been sufficient for forty years, in seas which are only frequented by merchant vessels, carrying on the fur trade.

With respect to Mexico proper, or that part of the kingdom situated under the torrid zone, it is sufficient to glance at the atlas which accompanies this work, and especially the physical sections, to be convinced that there is scarcely a country on the globe, of which the military defence is more favoured by the configuration of the ground. Narrow

and crooked paths, like those of Saint Gothard and the greatest part of the passes of the Alps, lead from the coast towards the interior table land, in which the population, civilisation, and wealth of the country are concentrated. The slope of the cordilleras is more rapid on the Vera Cruz than on the Acapulco road; and although the currents of the South Sea, and several meteorological causes, render the western coast less accessible than the eastern coast, Mexico may be considered as better fortified by nature, on the Atlantic side, than on the side opposite to Asia. However to preserve this country from invasion, the internal resources must alone be looked to; for the state of the ports* situated on the coast, washed by the gulph of Mexico, will not admit of the keeping up a maritime force.

The vessels destined by the court of Spain to protect Vera Cruz have always been stationed at the Havannah; and this port, which contains numerous and excellent fortifications, has always been considered as the military port of Mexico. An enemy's squadron can only anchor at the foot of the castle of Saint John d'Ulua, which rises like a rock in the middle of the sea. This celebrated fort contains no other water but that of the cisterns, which have

* See Vol. i. p. 80.

lately undergone an amelioration, being subject to split from the discharge of the artillery; but persons of skill are of opinion that the fort of Ulua is capable of resisting till the extreme insalubrity of the climate affect the health of the besiegers, and the land forces descend from the central table land. At the entrance of the port of Acapulco, the Island Grifo contains a point much more capable of being fortified than the shoal of the Gallega in the port of Vera Cruz.

To the north and south of Vera Cruz the coast is low, and the mouths of the rivers from bars are only accessible to boats. The defence of the coast was organized fifteen years ago, when the fear of an invasion occasioned considerable assemblages of troops near Orizaba, and when for two centuries and a half Mexico was first seen to assume a warlike attitude. It was then found that numerous posts and signals, flat bottomed boats with guns of a large calibre, and light cavalry capable of repairing rapidly to the threatened points were the most useful and least expensive mode of defence.

An enemy who lands may proceed towards the table land either by Xalapa and Perote, turning by the north side of the mountain of the Coffre, or by ascending the Cordilleras by Cordoba to the south of the Volcan d'Orizaba.

These roads present in a great measure the same difficulties as those which must be surmounted in ascending from Guayra to Caracas, from Honda to Santa Fe, or from Guayaquil to the beautiful valley of Quito. On the Xalapa road, at the entrance of the table land of la Puebla there is a small fort which bears the pompous name of the fortress of Saint Charles of Perote, which requires more than a million of francs annually for the expence of keeping it up. This fort can only be useful as a depôt for arms and ammunition. The surest means of obstructing the enemy's way and to retard his progress would be to fortify the defiles themselves, for the military defence of the passage.

The facility of prohibiting all access to the table land by a very small number of troops well divided is so generally acknowledged in the country, that the government did not think proper to yield to the demands of those who were against the making of the road of Xalapa, from the danger which would thence arise to the military defence of New Spain. It felt that such considerations would paralyze all undertakings for the public prosperity, and that a mountainous people, rich in agriculture, mines, and commerce, requires an active communication with the coasts. The better these

coasts are inhabitated they will oppose the stronger resistance to a foreign enemy.

I have traced in this work a political view of New Spain; I have discussed the astronomical materials which served to determine the position and extent of this vast Empire; I have considered the configuration of the country, its geological constitution, and temperature, and the aspect of its vegetation; I have examined the population of the country, the manners of the inhabitants, the state of agriculture and the mines, the progress of manufactures and commerce; I have endeavoured to show the revenues of the state and its means of external defence: let us now recapitulate what we have stated respecting the present state of Mexico.

Physical aspect.—— In the centre of the country a long chain of mountains runs first from the south east to the north west, and afterwards beyond the parallel of 30° from south to north: vast table lands stretch out on the ridge of these mountains, gradually declining towards the temperate zone; under the torrid zone their absolute height is from 2300 to 2400

metrès*. The ascent of the Cordilleras is covered with thick forests, while the central table land is almost always arid and destitute of vegetation. The most elevated summits, many of which rise beyond the limits of perpetual snow, are crowned with oak and pine. In the equinoctial region the different climates rise as it were by stories above one another: between the 15° and 22° of latitude the mean temperature of the shore which is humid and unhealthy for individuals born in cold countries, is from 25 to 27 centigrade degrees†; and that of the central table land which is celebrated on account of the great salubrity of the air, is from 16 to 17 degrees‡. There is a want of rain in the interior, and the most populous part of the country is destitute of navigable rivers.

Territorial extent. —— A hundred and eighteen thousand square leagues of which two thirds are under the temperate zone; and the third contained under the torrid zone enjoys in a great measure on account of the great elevation of its table lands, a temperature similar to what we experience in spring in Spain and the south of Italy.

* 7545 and 7873 feet. *Trans.*

† 77° and 80°. 6 of Fahr. *Trans.*

‡ From 60°. 8 to 62°. 6 of Fahr. *Trans.*

Population. —— Five millions eight hundred and forty thousand inhabitants, whereof two millions and a half are copper coloured Indians, one million Mexican Spaniards, seventy thousand European Spaniards; almost no Negro slaves. The population is concentrated on the central table land. The clergy only consists of 14 thousand individuals. The population of the capital 135,000 souls.

Agriculture. —— The banana, the manioc, maize, cerealia, and potatoes, are the foundation of the nourishment of the people. The cerealia cultivated under the torrid zone, wherever the surface rises to twelve or thirteen hundred metres of elevation* produce twenty-four for one. The maguey (*agave*) may be considered as the Indian vine. The cultivation of the sugar cane has lately made a rapid progress; and Vera Cruz annually exports Mexican sugar to the value of 1,300,000 piastres. The finest cotton is produced on the western coast. The cultivation of the cocoa and indigo is equally neglected. The vanilla of the forests of Quilate produces annually 900 *millares*. Tobacco is carefully cultivated in the districts of Orizaba and Cordova; wax abounds in Yucatan; the cochineal harvest of Oaxaca

* 3930 or 4264 feet. *Trans.*

amounts to 400,000 kilogrammes per annum. Horned cattle have greatly multiplied in the *Provincias internas* and on the eastern coast between Panuco and Huasacualco. The tithes of the clergy, the value of which points out the increase of territorial produce, have increased two fifths within the last ten years.

Mines. —— Annual produce in gold, 1600 kilogrammes* in silver, 537,000 kilogrammes†: in all 23 million of piastres, or nearly the half of the precious metals annually extracted from the mines of North and South America. The mint of Mexico, has furnished from 1690 to 1803, more than 1353 millions of piastres, and from the discovery of New Spain to the commencement of the nineteenth century, probably 2028 millions of piastres, or nearly two fifths of the whole gold and silver, which in that interval of time have flowed from the New Continent into the Old. Three districts of mines, Guanaxuato, Zacatecas, and Catorce, which form a central group between the 21° and 24° of latitude, yield nearly the half of all the gold and silver extracted from the mines of New Spain. The vein of Guanaxuato alone, richer than the mineral depository of Potosi,

* 4289 lb. troy. *Trans.*

† 1,439,832 lb. troy. *Trans.*

furnishes at an average 130,000 kilogrammes of silver annually, or a sixth of all the silver which America annually throws into circulation. The single mine of Valenciana in which the expence of working exceeds four millions and a half of francs per annum, has for the last forty years never ceased to yield annually to the proprietors a net profit of more than three millions of francs: this profit sometimes amounted to six millions; and it amounted to twenty millions in the space of a few months for the family of Fagoaga at Sombrerete. The produce of the mines of Mexico has tripled in fifty-two years and sextupled in a hundred years; and it will admit of greater increase as the country shall become more populous and industry and information become more diffused. The working of the mines far from being unfavourable to agriculture, has favoured cultivation in the most uninhabited regions. The wealth of the Mexican mines consists more in the abundance than in the intrinsic riches of the silver minerals, which only amount at an average to .0002 (or to three or four ounces per quintal of 100 pounds). The quantity of minerals extracted by means of mercury is to that produced by smelting in the proportion of $3\frac{1}{4}$ to 1. The process of amalgamation used is long, and occasions a great waste of mercury: the consumption for all New Spain amounts to

700,000 kilogrammes per annum. It is to be presumed that the Mexican Cordilleras will one day supply the mercury, iron, copper, and lead necessary for internal consumption.

Manufactures. —— Value of the annual produce of manufacturing industry from seven to eight millions of piastres. The manufacture of hides, cloth, and calicoes, have been on the increase since the conclusion of the last century.

Commerce. —— Importation of foreign produce and goods 20 millions of piastres; exportation in agricultural produce and manufactures of New Spain six millions of piastres. The mines produce in gold and silver 23 millions of which eight or nine are exported on account of the king: consequently if we deduct from the remaining 15 millions of piastres, 14 millions to pay the excess of imports over the exports, we find the specie of Mexico hardly increases a million per annum.

Revenue. —— The gross revenue amounts to 20 millions of piastres, whereof 5,500,000 from the produce of the gold and silver mines, four millions from the tobacco farm, three millions from the alcavalas, 1,300,000 from the Indian capitation tax, and 800,000 from the duty on pulque or fermented juice of the agave.

Military defence. —— It consumes the fourth of the total revenue. The Mexican army is 30,000 strong, whereof scarcely a third are regular troops, and more than two thirds militia. The petty warfare continually carried on with the wandering Indians in the *provincias internas* and the maintenance of the *presidios* or military posts require a very considerable expence. The state of the eastern coast and the configuration of the surface of the country facilitate its defence against any invasion attempted by a maritime power.

Such are the principal results to which I have been led. May this labour begun in the capital of New Spain be of utility to those called to watch over public prosperity! and may it in an especial manner impress upon them this important truth, that the prosperity of the whites is intimately connected with that of the copper coloured race, and that there can be no durable prosperity for the two Americas till this unfortunate race, humiliated but not degraded by long oppression, shall participate in all the advantages resulting from the progress of civilization and the improvement of social order!

NOTES

AND

SUPPLEMENT.

NOTES.

Note A. (vol. i. page 6.)

THIS information is derived from the manuscripts of Don Josef de Moraleda, preserved in the archives of the viceroyalty of Lima, quoted in the second chapter, p. 42. I have made no mention of the Malouin islands, although their latitude is eight degrees farther south, than that of the island of Caylin, because in the Malouin group, properly speaking, there is no solid establishment. Two corvettes, commanded by officers of the royal navy, annually convey criminals, from Montevideo, to the port of Soledad. These wretches are allowed to construct barracks; but as the viceroy of Buenos Ayres, agreeably to the orders of the court of Madrid, dare send no women to the presidio of the Malouin islands, this military post cannot be reckoned on the same footing with those of New California, which are surrounded with women and villages.

The Archipelago of the Huaytecas, and and Chonos islands, which extend from the 44° 20′ to the 45° 46′ of south latitude, present only a mass of granite rocks, covered with thick forests. The Indians of Chiloe, known by the name of Guayhuenes and Payos, periodically visit these shoals. They have put cows in the islands of Tequehuen, Ayaupa, Menchuan, and Yquilao. On the opposite continent, the coast which stretches out to the south of the Fort Maullin, is inhabited by the Juncos Indians, who form an independent tribe.

Note B*. (vol. i. p. 44.)

The island of Cuba, draws for the maintenance of the free inhabitants and slaves, a great quantity of provisions, and especially salt meat (*tasajo*) from the coast of Caracas. When Spain is at war with England, the navigation from Cumana, Nueva Barcelona, and Guayra, to the Havanah, is very dangerous, on account of the necessity of doubling cape Saint Antony. The enemies' cruizers are stationed near the Cayman Islands, between cape Catoche and cape Saint Antony, and particularly among the Tortugas. This group of shoals, is situated to the west of the ex-

* No reference appears in vol. i. corresponding with this note. *Trans.*

tremity of Eastern Florida, and the vessels destitute of chronometers, or other means for determining the longitude, are obliged to reconnoitre the Tortugas, for the sake of directing their course from thence to the Havanah, through a sea, constantly agitated by currents. To avoid a great part of these dangers, it has been projected, to establish in the island of Cuba, an interior communication between the southern and northern coast: or, to avail myself of an improper expression, in use among the natives, to join the south and north seas. A navigable canal, for flat boats, will be opened for an extent of eighteen leagues, from the gulf of Batabano, to the bay of the Havanah, crossing the beautiful plains of the district de los Guines. This canal, which requires only a small number of locks, will at the same time serve to fertilize the country by irrigations; and the salt provisions, cocoa, indigo, and other productions of Terra Firma, will arrive by this way to the Havanah. The passage from Nueva Barcelona to Batabano, is not only very short, and secure enough in time of war, but it possesses also the advantage of exposing the vessels less to the dangers of shoals and tempests, than the ordinary navigations round cape Saint Antony, and the old Bahama channel.

Note C.* (vol. i. p. 100.)

To give an example of the method employed by the parish priests of Mexico, in drawing up the extracts, from which I have been enabled to judge of the excess of births, I shall here insert the detail of the tables of Singuilucan and Dolores, two villages inhabited only by Indians, and which enjoy, under the torrid zone, a climate extremely favourable to the health of man. The great increase of population, resulting from these tables is surprising enough.

* By mistake this note was referred to vol. i. p. 100, under the letter B.

A. Singuilucan.

I.	Births.	I.	Deaths.	II.	Births.	II.	Deaths.	III.	Births.	III.	Deaths
From 1750 to 1759.	60	From 1750 to 1759.	18	From 1760 to 1769.	91	From 1760 to 1769.	18	From 1770 to 1779.	87	From 1770 to 1779.	19
	41		4		75		35		76		21
	72		5		53		59		78		37
	65		22		72		17		52		33
	74		16		72		28		76		21
	69		10		87		44		71		25
	70		10		79		30		81		32
	77		13		101		13		102		35
	96		13		79		18		95		31
	68		19		81		29		87		43
	692		130		790		291		805		297

IV.	Births.	IV.	Deaths.	V.	Births.	V.	Deaths.
From 1780 to 1789.	67	From 1780 to 1789.	21	From 1790 to 1799.	81	From 1790 to 1799.	47
	111		29		105		59
	82		36		120		58
	70		22		119		59
	94		68		127		51
	100		55		105		52
	89		64		103		51
	60		60		126		94
	101		40		118		102
	86		77		128		52
	860		472		1132		625

Births in 1800 and 1801.	Deaths in 1800 and 1801.
131	56
150	79
281	135

Births in 51 years	4560
Deaths	1950
Excess of births	2610

B. Dolores.

I.	Births.	I.	Deaths.	II.	Births.	II.	Deaths.	III.	Births.	III.	Deaths.
From 1750 to 1760.	526	From 1750 to 1760.	77	From 1760 to 1770.	1074	From 1760 to 1770.	317	From 1770 to 1780.	1292	From 1770 to 1780.	281
	532		137		1146		315		1252		203
	1006		171		1137		694		1099		166
	1009		179		786		1565		1118		242
	1003		160		1495		187		1202		362
	842		186		1054		219		1421		221
	883		173		1166		340		1304		255
	1027		303		1407		420		1322		381
	1021		250		1177		349		1459		391
	1071		262		1240		283		1352		515
	8920		1898		11682		4689		12821		3017

IV.	Births.	IV.	Deaths.	V.	Births.	V.	Deaths.
From 1780 to 1790.	1287	From 1780 to 1790.	2580	From 1790 to 1800.	656	From 1790 to 1800.	300
	1401		313		1070		318
	1271		562		1297		515
	1644		471		1331		371
	1469		588		1074		313
	1095		741		1149		275
	798		2663		1482		502
	850		369		1492		650
	1329		315		1368		968
	1102		307		1567		394
	12246		8909		12486		4606

Births in 1801 and 1802.	Deaths in 1801 and 1802.
1455	556
1648	448
3103	1004

Births in 52 years	61,258
Deaths	24,123
Excess of births	37,135

Note C. *bis* (vol. ii. p. 81.)

The following Tables contain the detail of the enumeration made in the City of Mexico by orders of the Viceroy Count de Revillagigedo: we have already observed that the actual population is 135,000 souls.

State of the Population of the City of Mexico in 1790.

I.

Monks.	Number of the Convents.	Priests and choristers.	Novices.	Lay Brothers.	Donados.	Servants.	Children.	Total.
Santo Domingo - - -	1	60	9	4	1	40	0	114
Porta Cœli (Casa de estudios) *idem* - - - - - -	1	22	0	9	1	6	0	29
San Francisco; Observantes	1	91	8	25	9	28	0	161
Santiago Tlaletolco (Casa de estudios) *idem* - - -	1	33	0	2	1	6	0	42
S. Fernando (Colegio de Misioneros) *idem* - - -	1	45	0	19	6	1	0	71
San Cosme (Recoleccion) *idem* - - - - - -	1	16	4	10	5	35	0	70
San Diego (Descalzos) *idem*	1	45	0	6	16	16	0	83
San Augustin (Calzados)	1	71	11	2	4	9	0	97
S. Pablo (Casa de estud.) *idem* - - - - - -	1	18	0	0	0	6	0	24
S. Tomas (Hospicio de Misioneros) *idem* - - -	1	3	0	2	0	5	0	10
San Nicolas (Hospicio de Descalzos) *idem* - -	1	4	0	1	0	8	0	13
El Carmen (Descalzos) -	1	40	0	7	2	15	4	68
La Merced (Calzados) -	1	62	9	4	0	13	0	88
Belen de Mercenario (Casa de estud.) *idem* - - -	1	24	0	2	0	2	0	28
San Camilo (Agonizantes)	1	7	0	3	1	7	0	18
San Juan de Dios (Hospitalarios) - - - - - -	1	5	8	23	2	15	0	53
San Lazaro, *idem* - - -	1	2	0	0	2	6	0	10
San Hipolito (Hospitalarios)	1	2	6	19	3	0	0	30
Espiritu Santo (Hipolitos)	1	1	0	4	1	4	0	10
Belemitas (Hospitalarios)	1	2	3	36	4	9	15	69
San Felipe Neri (Congreg. del Oratorio) - - -	1	14	1	3	0	15	0	33
Monserrate (Benitos) -	1	3	0	0	0	4	0	7
San Antonio Abad (Canons regular) - - - - -	1	3	0	3	2	5	0	13
Total	23	573	59	175	60	255	19	1141

II.

Nuns.	Number of the Convents.	Professed.	Novices.	Children.	Domestics		Chaplains		Total.
					Of the community.	Of the Nuns.	Secular.	Regular.	
Concepcion - - -	1	77	1	22	20	78	3	0	201
Regina *idem* - - -	1	63	2	9	16	65	2	0	157
Balvanera *idem* -	1	38	1	14	14	47	2	0	116
Jesus Maria *idem* -	1	60	2	0	20	62	3	0	147
Encarnacion *idem* -	1	65	2	7	16	67	2	0	159
Santa Iñes *idem* - -	1	25	1	11	8	26	1	0	72
S. Jozef de Gracia *idem*	1	40	1	6	9	41	2	0	99
San Bernardo *idem*	1	44	0	11	14	44	2	0	115
San Geronimo (Geronimas) *idem* - - - -	1	58	6	11	12	68	2	0	157
San Lorenzo *idem* -	1	37	3	10	14	47	2	0	113
S. Teresa la antigua (Carmelitas Desc.)	1	21	0	0	0	0	2	0	23
S. Teresa la nueva *idem*	1	17	1	0	0	0	1	0	19
San Felipe de Jesus (Capuchinas) - - -	1	34	2	0	0	0	1	0	37
Santa Brigida - -	1	30	1	0	0	0	3	0	34
Enseñanza - - -	1	69	3	0	0	0	3	0	75
Santa Catalina de Sena (Dominicas) - -	1	46	3	28	15	49	0	2	143
Santa Clara - - -	1	60	0	16	16	45	0	3	140
San Juan de la Penitencia (Claras) - -	1	39	2	10	16	41	0	2	110
Santa Isabel *idem* -	1	37	3	10	21	52	0	2	125
Corpus Christi or Capuchinas (Indians)	1	28	1	0	0	0	0	2	31
Total	20	888	35	165	211	732	31	11	2073

III.

Secular Persons.

Age.	Individuals unmarried.		Individuals married.		Widowers.	Widows.	Total.	
	Males.	Females.	Males.	Females.			Males.	Females.
From 0 to 7 years	8559	9823	0	0	0	0	8559	9823
From 7 to 16 —	7458	9099	71	325	104	149	7633	9573
From 16 to 25 —	4819	5608	3350	5846	228	986	8397	12440
From 25 to 40 —	2508	3237	9097	9695	804	4189	12409	17121
From 40 to 50 —	935	983	3135	2134	687	2755	4757	5872
50 and upwards.	720	728	2086	1112	917	2613	3723	4453
	54477		36851		13432		104760	

IV.

Distinction of the Casts.

Casts.	From 0 to 7 years.		From 7 to 16.		From 16 to 25.		From 25 to 40.		From 40 to 50.		50 and upwards.		Total.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
Europeans	5	2	40	11	330	81	714	65	612	33	417	25	2118	217
Spaniards	3949	4085	3606	4704	4050	6018	5600	8551	2366	3314	1767	2361	21338	29033
Indians	1862	1896	2171	2587	2111	3204	3351	4523	939	1170	798	991	11232	14371
Mulattoes	936	1240	403	560	514	621	721	944	191	425	193	346	2958	4136
Other Casts	1807	2600	1413	1711	1392	2516	2023	3038	649	930	548	730	7832	11525
	8559	9823	7633	9573	8937	12440	12409	17121	4757	5872	3723	4453	45478	59282
	18382		17206		20837		29530		10629		8176		104760	
Total							104760							

V.

Schools (Colegios) for males.	Preceptors.		Pupils (colegiales.)		Domestics.	Total.
	Secular priests.	Regulars.	Laity.	Clergy.		
Colegio Mayor de Santos -	0	0	6	0	10	16
Seminario - - -	13	0	261	20	24	318
San Ildefonso - -	8	0	213	23	56	300
San Juan de Latran - -	7	0	59	6	15	87
Infantes - - -	3	0	15	0	8	26
San Ramon - - -	0	1	4	2	5	12
Santiago Tlatelolco - -	0	3	23	0	0	26
S. Gregorio (Indians) - -	1	0	38	8	4	51
Total - -	32	4	619	59	122	836

VI.

Female Schools.	Instructresses.		Pupils.	Chaplains.	Domestics.	Total.
	Nuns.	Secular.				
Jesus Maria - - -	6	0	125	1	1	133
La Enseñanza - -	10	0	60	0	4	74
Las Ninas - - -	0	0	33	2	6	41
S. Ignacio (or Viscaynas) -	0	4	266	2	0	272
Belen (or de Mochas) -	0	8	235	2	0	245
Guadalupe (Indians) - -	0	4	40	0	8	52
Total - - -	16	16	759	7	19	817

VII.

Hospitals.

Names of Hospitals.	Chaplains.		Overseers.	Domestics.	Patients.		Maniacs.		Physicians.	Total.
	Secular.	Regular.			Males.	Females.	Males.	Females.		
Real de Indios - -	4	0	2	33	100	63	0	0	3	205
Hospital general de San Andres	6	0	17	82	337	136	0	0	8	585
San Juan de Dios - -	0	2	0	8	44	56	0	0	2	112
Espiritu Santo - - -	0	1	0	5	22	0	0	0	1	29
La Teresa orden del S. Francisco	0	1	3	14	4	11	0	0	2	35
Convalescencia of the Belemitas	0	0	0	6	45	0	0	0	1	52
Maniacs of the clergy (la S.S. Trin.)	3	0	2	7	0	0	19	0	1	32
Maniacs of San Hipolito -	0	2	0	8	0	0	90	0	1	101
Maniacs of La Casa del Salvador	1	0	3	4	0	0	0	53	0	61
Incurables of San Lazaro -	0	2	2	5	41	22	0	0	1	73
Idem at San Antonio Abad -	1	0	3	3	8	9	0	0	0	24
Jesus Nazar. del Estado del Valle	2	0	2	10	12	6	0	0	4	36
Total - -	17	8	34	185	613	303	109	53	24	1346

Charitable Institutions.	Chaplains.	Overseers.	Domestics.	Foundlings.		Males.	Females.	Total.
				Males.	Females.			
Expositos - - -	1	4	5	118	95	0	0	223
Hospital of the Poor - -	2	2	24	113	56	312	429	938
La Miseracordia (married women)	1	2	2	0	0	0	4	0
Total - -	4	8	31	231	151	312	433	1170

VIII.

Prisons.	Males.	Females.	Chaplains.	Overseers.	Domestics.	Total.
Of the Court	195	24	0	1	2	222
Of the City	75	35	0	1	3	114
Of the Acordada . . .	286	16	2	3	12	319
Of the Inquisition . .	0	0	1	3	1	5
Of the Archbishoprick .	30	3	1	7	6	47
La Magdalena de Recogidas	0	88	1	3	5	97
Of the Indians. . . .	15	3	0	0	0	18
Total . . .	601	169	5	18	29	822

IX.

Inhabitants of Mexico divided according to their occupations.

Prebendaries	26
Parish priests	16
Curates	43
Secular priests	517
Officers of the Inquisition	33
Officers of the Cruzada	5
Titled persons (*titulos de Castillo*)	44
Knights of royal orders	38
Doctors	204
Advocates	171
Physicians	51
Surgeons and Barbers	227
Manufacturers	1474
Students under ecclesiastical jurisdiction (*de capa*)	368
Students under military jurisdiction	510
Officers of finance	311
Notaries	63
Officers of the Acordada	177
Cultivators	97
Miners	40
Merchants	1384
Artizans	8157
Day labourers	7430
Individuals subject to capitation	9086

X.

RECAPITULATION.

Laity and Secular Clergy			104 760
Individuals living in convents and colleges			
Males	3484		
Females	3046		6,530
Monks	748		
Nuns	888		1,636
Total (not including the military)			112,926

Note D. (Vol. II. p. 110.)

I must add to the materials which have enabled me to draw up the history of the hydraulical works of the valley of Mexico, two manuscript memoirs, the one entitled, *Relacion de la visita del desague real hecha en* 1764; and the other, *Auto formado en San Christobal, en el mes de Enero de* 1764, *por mando del illustrissimo Señor Don Domingo de Trespalacios, del supremo consejo y camara de Indias.* According to these memoirs, the engineer Ildefonso Yniesta, found 65,250 varas from the banks of the Lake of Tezcuco, to the cascade of Tula, while the result of the trigonometrical operations and measurements under the direction of Professor Velasquez, makes the distance only 62,363 *varas.* This last result which has been taken in the map of the valley of Mexico, must be regarded as the most accurate, not only on account of the perfection of the instruments employed in 1774, but also on account of the agreement between the distances of Velasquez and those determined by Martinez in 1611, who computed the distance from the Lake of Tezcuco to Vertideros at 35,421 *varas.* Velasquez fixed it at 35,168; and the measurement of Yniesta makes it 38,740 *varas,*

Note E. (Vol. II. p. 194.)

I have discussed in another place the striking analogy between the Temple of Jupiter Belus, and the pyramids of Sakharah with the teocallis, or houses of the Mexican gods, which were both temples and tombs. See my *Vues des Cordilleres, et Monumens des peuples Indigenes de l'Amerique*, p. 24—40.

Note F *. (Vol. II. p. 342.)

The following Table indicates the state of the missions in New California in 1802. In the enumeration of the Indians, the sexes are distinguished by initial letters *m.* and *f.* Under the head of horses, both those which are tame and those which run wild in the Savannahs are included: the number of the former only amounts to 2187. These details respecting the state of agriculture and civilization of the north west coast of America, become particularly interesting, since the Congress of Washington have resolved to found a colony at the mouth of the river Columbia. (See Vol. I. p. 20. Vol. II. p. 382, 397). The navigation from Monterey to the mouth of the Columbia is eight or ten days, and the new colonists may procure cows and mules from the missions of New California.

* By mistake this note is referred to page 342, under the letter D.

Villages or missions.	Births.	Marriages.	Deaths.	Total (Indians.)	Oxen and cows.	Sheep.	Horses.	Mules.
San Diego . .	5952	702	1283	1559 737 m. 822 f.	6050	6000	900	66
S. Luis R. de Francia .	568	113	104	532 256 m. 276 f.	1400	2700	226	18
San Juan Capistrano .	2137	491	1033	1013 502 m. 511 f.	8710	15300	660	58
San Gabriel . . .	3397	746	2151	1047 532 m. 515 f.	7500	13045	1430	100
San Fernando . .	748	169	188	614 317 m. 297 f.	900	2200	270	43
San Buenaventura . .	1669	318	693	938 436 m. 502 f.	12450	5306	2085	112
Total carried over	14471	2539	5452	5703 2780 m. 2923 f.	37010	44551	5571	397

Villages or missions.	Births.	Marriages.	Deaths.	Total (Indians.)	Oxen and Cows.	Sheep.	Horses.	Mules.
Brought over	14471	2539	5452	5703 2780 m. 2923 f.	37010	44551	5571	397
Santa Barbara - -	2251	494	989	1093 521 m. 572 f.	2100	9082	627	58
L Puriss. Conception	1582	356	557	1028 457 m. 571 f.	2640	5400	326	44
San Luis Obispo - -	1735	467	962	699 374 m. 325 f.	5100	5300	1120	100
San Miguel - - -	729	164	163	614 309 m. 305 f.	606	3099	284	28
Soledad - - -	887	218	401	563 296 m. 267 f.	1000	4000	520	19
San Antonio de Padua	2730	641	1527	1052 568 m. 484 f.	2221	5530	635	37
Total carried over -	24385	4879	10051	10752 5305 m. 5447 f.	50677	76962	9083	683

Villages or missions.	Births.	Marriages.	Deaths.	Total (Indians.)	Oxen and Cows.	Sheep.	Horses.	Mules.
Brought over	24385	4879	10051	10752 5305 m. 5447 f.	50677	76962	9093	683
S. Carlos de Monterey	2418	633	1496	688 376 m. 312 f.	1200	6000	875	34
San Juan Bauptista -	1079	203	184	958 530 m. 428 f.	618	3800	454	6
Santa Cruz - - -	1031	306	591	437 238 m. 199 f.	1407	2915	1861	88
Santa Clara - - -	4407	1010	2967	1291 736 m. 555 f.	5000	6000	6100	30
San Jose - - - -	857	218	243	622 327 m. 295 f.	620	3500	263	10
San Francisco -	2540	760	1442	814 438 m. 381 f.	8260	8000	793	26
Total	36717	8009	16974	15562 7945 m. 7617 f.	67782	107177	19429	877

Note G. (Vol. IV. p. 117.)

For the sake of better illustrating the comparisons which I have frequently made in the course of this work, between the territorial wealth and extent of the United States and New Spain, I shall here subjoin statistical tables which I owe to the kindness of M. Gallatin, the treasurer of the United States, at Washington, drawn up from the custom-house books. These tables, exhibit the value of the exports of the United States, both in home and foreign produce, during the four years preceding 1803; the state of exportation of home produce in 1803; the state of the custom-house revenue in 1802 and 1803, drawn up, for the purpose of shewing the amount of the commerce, on different points of the coast; and finally, a state of the *tonnage* of the vessels of the United States, from 1799 to 1802. I preferred tables framed for the years 1802 and 1803, to more recent materials, because these tables embrace the period corresponding to the greatest part of the information, collected by me relative to Mexico.

I.

State of the value of the Exports of the United States, in dollars, (at 5 fr. 42c.) in the years 1799, 1800, 1801, 1802, and 1803.

	1799	1800	1801	1802	1803
Value of the exportation of produce of the country - - - - -	33,142,193	31,840,903	46,377,792	36,182,173	42,205,961*
Value of the exportation of foreign produce -	45,523,329	39,130,877	46,642,721	35,774,971	13,594,072

* The rolls of the receivers bear exactly 42,205,961.

Summary State of the Value of the Exports of the United States, from the 1st October, 1802, to the 30th September, 1803.

		Dollars.		
Sea 2,635,000	I. *Fishery*			
	Dried fish, or cod	- -	1,620,000	2,635,000
	Pickled, or river fish	- -	560,000	
	Whale (common) oil and bones	280,000	455,000	
	Spermaceti oil and candles	175,000		
Forests. 4,850,000	II. *Skins and furs* (Indian produce)	- -	530,000	630,000
	Ginseng	- -	100,000	
	III. *Produce of the Forests*			
	Prepared wood (planks, pipe-staffs, shingles, masts, &c.)	- -	2,800,000	4,220,000
	Oak bark, and other barks, for tanning and dying	- -	225,000	
	Materials employed in ship-building (pitch, tar, turpentine)	- -	460,000	
	Potashes	- -	735,000	
	Carried over	- -	- -	7,485,000

		Dollars.		
Agriculture 32,095,000	II. *Animal productions* Brought over	- -	- -	7,485,000
	Horned cattle			
	Beeves, tallow, hides, live cattle - -	1,145,000	1,730,000	
	Butter and cheese - - -	585,000		4,135,000
	Salt pork, bacon, hog's lard, (live hogs) -	- -	1,890,000	
	Horses and mules - - -	460,000	515,000	
	Sheep - - -	55,000		
	V. *Eatables of the vegetable kingdom* -			
	Wheat, flour, biscuit - -	- -	9,310,000	
	Maize and maize flour - -	- -	2,025,000	14,080,000
	Rice - - - -	- -	2,455,000	
	All other species (rye, oats, legumes, potatoes, apples)	- -	290,000	
	VI. *Tobacco* - - -	- -	- -	6,230,000
	VII. *Cotton* - - - -	- -	- -	7,920,000
	VIII. *Other agricultural produce* -			
	Lintseed - - -	- -	465,000	
	Hops - - - -	- -	90,000	
	Wax - - - - -	- -	60,000	630,000
	Different objects (poultry, hemp, flax, indigo, mustard) - - - -	- -	15,000	
	Carried over	- -	- -	40,480,000

			Dollars.		
	Brought over		- -	- -	40,480,000
Manufactures 1,355,000	IX. *Manufactures*				
	Of raw native materials				
	Soap, candlesticks, boots, shoes, saddlery		395,000		
	Hats		18,000		
	Beads, brandy, beer, starch		21.000		
	Wood including furniture and coaches		210,000		
	Cordage, canvas, lintseed oil		50,000		
	Iron, viz.			790,000	
	Pig iron	26,000			
	In bars	18,000			
	Cast	6,000	80,000		1,355,000
	Nails	8,000			
	Wrought	22,000			
	Different objects (snuff, wax candles, cards, bricks, &c.)		16,000		
	Of foreign materials				
	Spirit of molasses		481,000		
	Refined sugar		18,000		
	Chocolate		4,000	565,000	
	Gunpowder		38,000		
	Brass and copper		6,000		
	Medicines		18,000		
Uncertain 300,000	X. *Different articles* (of manufacture or agriculture not specified in the states of produce)		- -	- -	300,000
				Total	42,135,000

III.

State of payments made into the treasury by the receivers of the customs in the years 1802 and 1803.

(The cyphers indicate dollars and cents.)

Provinces.		Districts.	1802.		1803.	
New Hampshire - -		Portsmouth	117,165	28	103,516	95
Massachusets	Massachusets proper.	Newbury port	79,315	22	125,972	86
		Gloucester	13,346	74	20,262	60
		Salem	258,035	28	234,981	84
		Marblehead	13,631	27	34,942	54
		Ipswich			600	
		Boston	1,794,475	20	1,410,429	92
		Plymouth	13,594	40	10,272	
		Barnstable	8,169	93	3,842	71
		Nantucket	3,431	70	25,012	01
		Edgar Town	1,249	75	2,239	53
		New Bedford	29,894	97	15,978	04
		Dighton	13,400		12,100	
	Maine.	York	5,266	80	7,050	57
		Biddeford	19,044	84	15,998	68
		Kennebunke	41,457	24	41,684	73
		Portland	123,898	59	137,488	71
		Bath	25,224	3	25,949	69
		Wiscasset	29,044	36	16,382	49
		Waldoborough	16,201	42	16,174	24
		Penobscot	10,099	80	13,772	37
		Machias	500			
	Total	carried over	2,616,446	82	2,274,652	48

Continuation of Table III.

Provinces.	Districts.	1809.		1803.	
	Brought over	2,616,446	63	2,274,652	48
Vermont	Vermont	940		405	93
Rhode Island	New-Port	120,476	35	44,139	52
	Bristol	17,000		21,600	
	Providence	178,913	97	158,603	25
Connecticut	New London	82,897	60	48,467	74
	Middletown	82,815	49	115,267	26
	New-Haven	183,358	53	91,450	
	Fairfield	28,700		9,800	
New York	Champlain	700		- - -	
	Hudson	3,738	24	3,215	75
	Sag-Harbour	868	36	450	53
	New York	3,547,669	18	2,941,067	28
New Jersey	Perth Amboy	- -		1,450	
	Burlington	- -		1,000	
	Great Egg Harbour	4,500		1,200	
Pensylvania	Philadelphia	2,046,249	64	1,758,653	59
Delaware	Wilmington	90,620	36	71,961	33
Maryland	Baltimore	1,055,200		941,619	68
	Oxford	1,190	56	1,600	
	Snowhill	5,425	35	2,284	33
	Vienna	- -		2,500	
Columbia	George Town	3,050		2,000	
	Alexandria	99,500		139,684	40
Totals	Carried over	2,616,446	63	8,633,073	07
		7,553,811	63		

Continuation of Table III.

Provinces.	Districts.	1802.		1803.	
	Brought over	2,616,446	63	8,633,073	07
		7,553,811	63		
Virginia	Norfolk	514,805	19	460,010	26
	Petersburg	112,925	67	108,463	16
	Richmond	96,126	85	92,471	56
	York Town			1,500	
	Tappahannock	23,800		23,728	26
	Folly landing	2,400		4,000	
	Cherry-Stone	3,000		1,097	80
North Carolina	Wilmington	96,417	06	104,248	57
	Newbern	47,024		38,802	56
	Washington	24,071	45	19,126	94
	Edenton	35,500		31,224	66
	Cambden	9,300		5,800	
South Carolina	Georgetown	10,893	17	6,457	
	Charlestown	940,196	45	706,220	11
	Beaufort			2,500	
Georgia	Savannah	331,163	03	218,447	
	Brunswick	4,400		962	51
	Saint Marys	854	42	417	88
Mississipi territory	Mississipi	6,000		7,900	31
	Tenessee	500			
Indiana territory	Detroit	8,600		532	
	Michilimakinac			12,436	96
	Totals	12,438,235	55	10,479,413	51

IV.

A. State of the present tonnage of the shipping of the United States from 1799 to 1802.

Years.	In the coasting trade.	In the fisheries.	In foreign trade.	Total.
1799	203,759	31,595	440,000	675,000
1800	228,496	26,439	480,000	735,000
1801	227,214	35,997	595,000	858,000
1802	261,318	42,879	560,600	804,000

Nota.——In state A, we have only included the number of tonnage of ships belonging to citizens of the United States, and built in the country. The following comparative state (which merely relates to the foreign commerce of the United States) includes the *tonnage* which has every year entered the ports of the United States. As in this last state, the different voyages made by the same vessel in the course of the year, have been included, it follows that the amount of the *American tonnage in the foreign trade*, in state B. is superior every year to the American tonnage in the foreign trade in state A.

B. Comparative state of the American and foreign tonnage employed in the commerce between the United States and other countries.

Years.	American tonnage in foreign trade.	Foreign tonnage in American commerce.	Total of tonnage in the trade between the United States and other countries.	Proportion of foreign tonnage to the whole tonnage in the commerce between the United States and other countries.
1790	354,767	251,058	605,825	41. 4 per cent.
1794	525,649	84,251	610,170	13. 8
1799	626,855	107,583	734,438	14. 6
1800	684,350	122,403	806,753	15. 2
1801	850,397	157,270	1,007,667	15. 6
1802	800,276	145,519	945,795	15. 4

The following particulars prove the great activity of the commerce of the United States in European Madeira and Canary *wines* and American sugar.

A. Importation in the United States.	1800.	1801.	1812.
Wine, (the English gallon at 3 lit. 725)	Gallons.	Gallons.	Gallons.
Madeira . .	209,429	280,262	254,673
French (*Burgundy*)	2,172	4,490	5,352
Sherry (*Xerez*) . .	429,470	50,127	509,644
All other sorts . .	1,847,382	2,383,547	2,298,538
Total	2,488,453	2,718,426	3,068,187
Sugar, . .	Pounds.	Pounds.	Pounds.
Raw sugar (*cassonade*)	82,182,381	96,929,621	84,140,950
Loaf sugar . .	10,831	16,628	3,798
All other sorts . .	31,579,444	39,682,687	14,486,027
Total	113,772,656	136,628,936	98,630,775

Of this great quantity of wine and sugar imported, there came into the United States:

	1800.	1801.	1802.
1. In *Wine*	Gallons.	Gallons.	Gallons.
From France	24,663	402,728	1,084,640
Spain	1,319,930	949,778	955,557
The Canary Islands	211,546	286,588	192,769
Gibraltar	86,429	5,560	24,346
Portugal	298,958	336,968	342,742
The Island of Madeira	186,793	234,541	202,964
The Azore Islands	43,453	74,051	16,628
The Hanse Towns	77,577	105,553	37,234
Italy	123,928	132,657	67,418
2. In *Sugar* of America	Pounds.	Pounds.	Pounds.
From the Swedish Islands	2,382,477	2,623,354	1,302,470
Danish	4,400,748	11,366,036	11,668,850
English	12,875,220	8,345,277	10,783,925
French	16,421,113	24,879,745	28,707,143
Spanish colonies	58,974,789	75,482,036	29,402,492
Dutch colonies	7,204,580	3,526,483	6,824,948

B. Exportation of the United States.	1800.	1801.	1802.
Wines	Gallons.	Gallons.	Gallons.
Madeira	17,597	29,401	35,911
Different sorts of European wines without including the following quantities imported in bottles	1,465,234	1,447,358	1,248,315
In 1800 43,804			
1801 54,993			
1802 42,883			
	Pounds.	Pounds.	Pounds.
Sugar	56,432,516	97,565,732	61,061,820
The exportation was in 1801,			
For the Hanse Towns		27,219,888	
For England		27,818,404	
For Holland		14,560,993	
For France		9,645,521	
For Italy		6,771,831	
For Spain		5,593,426	

As the exportation of sugar from the ports of the United States, has risen to more than 45 millions of kilogrammes, it amounts to the fourth part of the whole produce of the American islands. See the estimates given by me Vol. III. chap. x. p. 14.

According to the interesting researches of M. Macall Medford, the value of the exports of the United States amounted,

		Dollars.
In 1794	to	33,026,233
1795		47,989,472
1796		67,064,097
1806		101,536,963

In the last year, the total value of the exports of Great Britain only amounted to the double of the exports of the United States. The following Table indicates the proportion of the foreign commerce belonging to the different parts of America.

Exports of the United States, from 1st October, 1805, to 30th September, 1806.

States.	Dollars.
New Hampshire	795,263
Vermont	193,775
Massachusets	21,199,243
Rhode Island	2,091,835
Connecticut	1,715,828
New York	21,762,845
New Jersey	33,867
Pensylvania	17,574,702
Delaware	500,106
Maryland	14,580,905
District of Columbia	1,246,146
Virginia	5,055,396
North Carolina	789,682
South Carolina	9,743,750
Georgia	82,764
Territories not erected into States	4,170,901
Sum total	101,537,008

In the course of the same year, the exports of the United States for the different parts of Great Britain were 1,600,000 pounds sterling, while the imports from England into the United States amounted to 6,800,000 pounds sterling. The commerce of the English nation with the United States, amounted then to a *seventh* of the value of the whole exports of Great Britain, which are valued by Mr. Medford at 51 millions of pounds sterling.

Note H. (Vol. IV. p. 123.)

The following Table exhibits the value of the exports from the Spanish Colonies of America for the port of Cadiz, from the period of the peace of Amiens, to the 31st December, 1802.

Denomination of goods.	Quantities.	Value in double piastres—price at Cadiz.
Cotton . .	54,112 quint.	1,535,040
Indigo . . .	3,892,675 lib.	9,931,687
Sugar . . .	1,029,613 arrob.	4,375,855
Vanilla . .	11,947,000 pieces	1,075,230
Cocoa of Caracas	33,075 faneg.	1,984,500
Ditto of Guayaquil . . .	21,532 ditto.	861,280
Coffee . . .	1,799,800 lib.	478,072
Campeachy wood	. . .	90,380
Quinquina . .	893,100 lib.	1,786,200
Copper . .	17,877 quint.	375,417
Hides . . .	339,382 ditto.	1,527,219
Cochineal { *Grana*	24,514 arrob.	2,528,007
Cochineal { *Granilla.*	1,392 ditto.	57,447
Pimento of Tabasco . .	99,875 lib.	16,646
Tallow . .	3,269 quint.	42,484
Jalap . . .	7,507 arrob.	375,350
Yellow wood (*moralete*) . .	3,777 quint.	7,554
Sarsaparilla .	364 ditto.	37,856
Brazil wood (*Brasilete*) . .	1,059 ditto.	10,590
Total of produce	. . . .	27,096,814
Gold and silver	. . . .	54,742,033
Total of the exports of the Spanish Colonies for Cadiz	. . . .	81,838,847

Note I. (Vol. IV. p. 246.)

M. Playfair (*Statistical Breviary*, p. 58). estimates the total population of the English possessions of Hindostan in 1801, at only 23 millions of inhabitants. He allows for the three provinces of Bengal, Bahar, and Benares, 18,500,000. According to the information received at the Presidency of Calcutta from the collectors of tributes, it was believed that the population of Bengal and Bahar in 1789 did not exceed 22 millions. Sir William Jones in the preface to his translation of *Al Sirajiyah*, lays down 24 millions; and the authors of the *Observations on the agriculture and commerce of Hindostan* *, printed at Calcutta in 1800, fix the population of Bengal, Bahar, and Benares at 27 millions. They even affirm that this estimate, far from being exaggerated, is on the contrary, perhaps three or four millions too low. From these data it appears that the English possessions of the Continent of Asia have 32,300,000 inhabitants, which, supposing a territorial extent of 48,299 square leagues, gives 673 individuals to the square league.

* *Remarks on the Husbandry and internal commerce of Bengal*, (*Calcutta*, 1801, *and reprinted in London*). Chap. ii. p. 15.

SUPPLEMENT.

On the Territorial Extent and Population of Spanish America.

I HAVE brought together in the following Table all the information which I have been able hitherto to acquire * respecting the territorial extent, population, produce of gold and silver mines, and value of imports from the old Continent into the Spanish Colonies of America. M. Oltmanns was kind enough to take the charge of the calculations of the extent of the surfaces in square leagues.

* See vol. i. p. 207 to 211. and vol. iii. p. 394 and vol. iv. p. 127.

SPANISH AMERICA, 1800.

Great Political Divisions.	Extent in Sq. Leagues of 25 to the Degree.	Population.	No. of inhabitants per sq. league.	Ann. Produce of Gold and Silver Mines, in Piastres.	Value of Goods of the old continent imported into America, in Piast.
Viceroyalty of New Spain (with its *provincias internas*)	118,478	5,900,000	49	23,000,000	20,000,000
Capitania general of Guatimala (with Nicaragua and Vera Paz)	26,152	1,200,000	46	Nothing.	2,000,000
The Islands of Cuba and Porto Rico,	6,921	600,000	87	Nothing.	11,000,000
The two Floridas,	8,555			Nothing.	
Capitania general of Caracas (Cumana, Venezuela, Coro, Maracaybo, Varinas, Guayana)	47,856	900,000	2	Nothing.	5,500,000
Viceroyalty of New Grenada (with the Presidency of Quito)	64,520	1,800,000	2	3,000,000	5,700,000
Viceroyalty of Peru,	30,390	1,700,000	33	8,000,000	11,500,000
Presidency of Chili,	22,574				
Viceroyalty of Buenos Ayres,	143,014	1,100,000	8	5,000,000	3,500,000
Spanish America,	468,460	13,200,000	28	39,000,000	59,200,000

I hope to be able at a future period to rectify this table, by procuring more accurate information respecting the population of the kingdom of Buenos Ayres, Guatimala, and Chili. According to Azara, the government of Paraguay contains 97,500 souls, and that of Plata 170,900. I believe I have estimated above, (chap. xiv. p. 246) the population of Spanish America too high by a tenth.

It has frequently been asked: What is the number of inhabitants in the whole of the New Continent? I shall examine this problem in the historical account of my Travels in America; it is sufficient to observe in this place, that the whole population does not probably exceed twenty-eight or twenty-nine millions of inhabitants.

	Inhabitants.
In the Spanish Colonies of the Continent of America - -	13,500,000
In the Portuguese Colonies - -	3,800,000
In the West India Islands - -	1,900,000
In the United States - - - -	6,000,000
In English Canada - - - - -	450,000
Total, not including Russian America and the Independent Indians,	25,650,000

On the Territorial Extent and Population of the United States, before the acquisition of Louisiana.

I have given in the third book (Chap. viii. Vol. i. p. 277), part of the data on which the result obtained by us for the United States, in the table of the territorial extent and population of the great political associations, is founded. The reader will find very valuable information, in the following account drawn up by M. Gallatin treasurer of the United States, which I have translated from the manuscript of the author.

" A chain of mountains extends from the " sources of the Apalachicola, or the 3° of " north latitude, to the sources of the Genesee, " and the Seneca, situated under the parallel " of 43°, and forms points of separation be- " tween the eastern and western waters, and " divides the United States in two unequal " parts. This chain of mountains is formed " of a great number of small chains parallel " to one another, and to the Atlantic coast; " and it is interrupted in several places by " the force and impetuosity of the torrents. " Considering the territory of the United " States according to its great natural divi- " sions, we shall prolong a line drawn in the

" direction of the Alleghany mountains, on " the north, to the west of the fall of Nia- " gara; and on the south, between the streams " of the Apalachicola, and the rivers which " flow into the Atlantic ocean. We shall in " the following table give the name of *eastern di-* " *vision*, to the whole extent of country of which " the waters mingle with the Atlantic, with lake " Ontario, and the river Saint Lawrence. What " we shall call the western division, will com- " prehend the rivers which flow into the lakes " above the fall of the Niagara, into the Mis- " sissippi, and the gulph of Mexico. I suppose " the eastern division to contain 320,000 " English square miles; and that the western " division is greater, and may be estimated at " 580,000 square miles.

" But considering the present state of the " populaton of the United States, there is " yet another more natural division. We may " distinguish the territory possessed by the " whites, and purchased from the Indians, " from that which is still possessed by the " Indians, in which they will permit no whites " to settle. The territory of the Indians ap- " pears to contain nearly the same surface " with that of the whites; and I compute " them at 450,000 square miles each. A small " part of the Indian lands containing only " 10,000 square miles, is included in the

" *eastern division*, because it is situated towards " the south east extremity of the state of " Georgia.

" From these data it follows that,

	square miles.
" The part of the *eastern division*	
" possessed by the whites contains	310,000
" The part of the *western division*	
" possessed by the whites, which	
" forms in the general table of	
" population, the third subdivision,	
" contains -	140,000
" The country possessed by the In-	
" dians contains - - -	450,000
	900,000

" The estimates of territorial extent and " population contained in this account, have " all a reference to the year 1800. Since that " period 15,060 square miles have been pur- " chased from the Indians, and the population " of the United States has in 1804, been " increased more than 12 per cent.

" To illustrate more clearly the progress of " population in the northern and southern " states, I have again divided the eastern ter- " ritory into the *north east and south west* " divisions. The former subdivision compre- " hends the east of Pensylvania, the Delaware,

" and all the other states situated to the " north east of the Delaware; and the second " subdivision contains all the *Atlantic* states " to the south of Pensylvania, and the Dela- " ware: the first contains 140,000, and the " second 170,000 square miles. We may con- " sider this last classification into north east, " and south west* states, as made from poli- " tical views; for the states which contain " slaves, and which are commonly called the " *Atlantic slave states,* are all included in the " south east division. It is almost super- " fluous to observe, that the western part of " Pensylvania and Virginia, situated to the " west of the Atlantic mountains, have been " considered as belonging to the western divi- " sion.

" I have added the enumeration of 1790, " and for the part occupied by the citizens " of the United States, the increase of popu- " lation of the whites, and the blacks, both " free and slaves. The number of blacks " has increased with nearly the same rapi- " dity, as that of the whites.

" From these researches which have been " carefully made, it appears that in the coun- " try possessed by the whites, we may reckon " 140 individuals to the marine square league;

* This should evidently be south east. *Trans.*

" but the population is so unequally distri-
" buted, that Massachusets, Connecticut,
" the southern part of New York, the interior
" of New Jersey, and the south east of Pen-
" sylvania, exceed 700 individuals per square
" league.

General Table of the Population of the United States.	Whites.	Blacks or people of Colour.			Total of whites and people of colour.	Square miles.	No o souls.	
		Free.	Slaves.	Total.			To the square mile.	To the marine sq league.
I. Territory possessed by the Whites								
1. Division of the north east - -	2,475,740	53,750	41,802	95,552	2,571,292	140,000	18.36	220
2. Division of the south east - -	1,304,678	52,097	788,322	840,419	2,145,097	170,000	12.62	151
3. Division of the west - - -	522,169	2,707	64,221	66,928	589,097	140,000	4.21	50
Total on the 1st October, 1800	4,302,587	108,554	894,345	1,002,899	5,305,486	450,000	11	141
Total on the 1st October, 1790	3,177,089	59,538	697,696	757,234	3,934,323			
Increase	1,125,498	49,016	196,649	245,665	1,371,163			
Proportion of increase per cent	35	82	28	32	34			
Total on the 1st October, 1800, as above	- -	- -	- -	- -	5,305,486			
II. Territory possessed by the Indians square miles.								
4th. { Atlantic part of Georgia - - 10,000 / On the western waters 444,000 }	- -	- -	- -	- -	60,000*	450,000	$0.13\frac{3}{4}$	$1\frac{3}{5}$
					5,365,486	900,000	6	71

* Indians by mere conjecture.

DETAILS.

	Whites.	Blacks, or people of colour.			Total of Whites and people of colour.
		Free.	Slaves.	Total.	
I. *Division of the North East*					
140,000 Square miles.					
Maine	150,901	818	- -	818	151,719
Massachusets proper	416,393	6,452	- -	6,452	422,845
Massachusets	567,294	7,270	- -	7,270	574,564
New Hampshire	182,998	852	8	860	183,858
Vermont	153,908	557	- -	557	154,465
Rhode Island	65,438	3,304	380	3,684	69,122
Connecticut	244,721	5,330	951	6,281	251,002
New York	555,063	10,374	20,613	30,987	586,050
New Jersey	194,325	4,402	12,422	16,824	211,149
Pensylvania, part east of the Alleghany mountains	462,141	13,393	1,275	14,668	476,809
Delaware	49,852	8,268	6,153	14,421	64,273
Total on 1st October, 1800	2,475,740	53,750	41,802	95,552	2,571,292
Total on 1st October, 1790 - -	1,879,321	30,830	48,425	79,255	1,958,576
Increase - -	596,419	22,920	- -	16,297	612,716
Diminution - -	- -	- -	6,623		
Proportion of increase per cent.	31	74		20	31
Proportion of decrease per cent.	- -		13		

		Whites.	Blacks, or people of colour.			Total of whites and people of colour.
			Free.	Slaves.	Total.	
	II. *Division of the South-East*					
270,000 Square miles.	Maryland	216,326	19,587	105,629	125,216	341,542
	District of Columbia	10,066	783	3,250	4,033	14,099
	Virginia, part situated to the east of the Alleghany mountains	443,199	19,580	340,297	359,877	803,076
	North Carolina	337,764	7,043	133,296	140,339	478,103
	South Carolina	196,255	3,185	146,151	149,336	345,591
	Eastern Georgia	101,068	1,919	59,699	61,618	162,686
	Total on 1st October 1800	1,304,678	52,097	788,322	840,419	2,145,097
	Total on 1st October 1790	1,090,701	27,928	629,684	657,612	1,748,313
	Increase	213,977	24,169	158,638	182,807	396,784
	Proportion of increase per cent.	19	86	25	27	22

	Whites.	Blacks, or people of colour.			Total of Whites and people of colour.
		Free.	Slaves.	Total.	
III. *Division of the West*					
Pensylvania, part situated to the west of the Alleghany mountains	123,954	431	1,171	1,602	125,556
Ohio	45,028	337		337	45,364
Virginia, part situated to the west of the Alleghany mountains	71,081	544	5,490	6,043	77,122
Kentucky	179,875	741	40,343	41,084	220,959
Tenessee	91,709	309	13,584	13,893	105,662
Dispersed in the territory of Indiana, and in that of Mississippi	10,522	345	3,624	3,969	14,491
Total on 1st October, 1800	522,169	2,707	64,221	66,928	589,097
Total on 1st October, 1790	207,067	780	19,587	20,367	227,434
Increase	315,102	1,927	44,634	46,561	361,663
Proportion of increase per cent.	152	272	227	228	159

On the Population of Brazil.

" One enumeration alone affords positive " results; and it is that of 1797 and 1798.— " Before that time the bishops were obliged " to send to the king, as grand-master of the " order of Christ, and consequently spiritual head " of the Colonies at fixed periods, a state of the " population of their dioceses. These states " were drawn up in the *tribunal of the orders* " called at Lisbon *meza da consciencia.* I was " enabled to see and examine the results of " the last state sent to king Joseph, about the " year 1776. This state only contained some- " what more than 1,500,000 souls: now the " bishops only included the *souls of the commu-* " *nion,* because according to the established " custom, the curates kept a register of these " persons alone, on account of the smallness of " the fees exigible. All the inhabitants below " ten years of age were consequently not in " these lists, and the Indians already *reduced* " or added to the missions, but not baptised, " were omitted in the same manner. With- " out fear of exaggeration, I believe I may " say that at that period (in 1776) the total " population was nearly 1,900,000 souls.

" The enumeration of 1798 was made with " great care, but has never been published,

" and I have received none of the particu-
" lars of it. I have it however from the best
" authorities, that it gave more than three
" millions, which is not very surprising, be-
" cause in Brazil the institutions, and per-
" haps also the manners, are singularly fa-
" vourable to population. The government
" has always very liberally given lands to
" colonists, and never sold any. The sys-
" tem of slavery adopted by the Portugueze
" has a tendency to multiply the negroes:
" no nation imports a greater number of fe-
" male negroes, and is more attentive to the
" bringing up of the children. As to the
" Indians, it was formerly remarked by La
" Condamine, that the civilization of the
" Portugueze Indians was very superior to
" that of the Spanish Indians. Several years
" after the voyage of the French astronomer,
" King Joseph adopted an important political
" measure, assimilating in every thing the
" Indians to the Portugueze whites. This
" measure has not met with any opposition
" from the public opinion; the *reduction* of
" the remaining Indians has gone on rapidly
" and prosperously. The emigration from
" Europe has continued without any encou-
" ragement; and according to the Portu-
" gueze custom, people have gone to Brazil
" to settle, and not for the sake of making

" their fortune and returning to the mother-
" country.

" For some years past, details respecting the
" population of Brazil have been published in
" several French journals, which appear to
" be the results of the enumeration of 1798.
" According to these journals, the population of
" Brazil consists of 800,000 Whites, 1,000,000
" of Indians, and 1,500,000 Negroes, in all
" 3,300,000. If we add the natural augmen-
" tation in a space of eleven or twelve years,
" I am persuaded that the actual population
" of Brazil must be nearly 4,000,000."

Note of M. Correa de Serra.

On the Plants cultivated in New Spain.

I shall bring together under this head a few notes relative to Botany and Agriculture; and I shall arrange them in the order according to which the different objects have been treated in the ninth and tenth chapters of this work.

The Prunus avium (vol. ii. p. 416) is undoubtedly a native of Europe; but the Prunus cerasus, which is a very distinct species, was brought to Rome by Lucullus. All the varieties which we cultivate belong to one or other of these two species of cherries.

The Cycas circinalis (vol. ii. p. 437) can

only be classed among ferns. According to the beautiful work of Mr. Brown on the Plants of the Islands of the Pacific Ocean, the Cycas is the representative of a new group of plants which may be designated under the name of *Cycadees**, and which according to M. Richard is strongly related to the family of the Coniferi.

In my researches respecting the history of the Ignames (vol. ii. p. 128) I have made no mention of the first voyage of Cabral, in the account of the navigation of *Pedro Aliares*, published by Cadamusto. It was not consequently on the Coast of Peru, as I was led to suppose, but in the Southern Hemisphere, that Ignames were seen by the Portugueze Admiral (*Grynæus*, p. 47, 67, and 215). Cadamusto, designated the famous Admiral Pedro Alvarez Cabral†, under the name of "*Petrus quidam Alieres* "*ac Abrilus Fidalcus.*" He calls Brazil, which is the *Land of the Holy Cross* of Cabral, *Insula Psittacorum.* (*Grynæus*, p. 94.)

The *Helianthus tuberosus* (*topinambour*) was formerly known in France by the name of *Canada Truffle.* North America, to the coast of the Gulph of Mexico, is the country of the Helianthoides.

According to M. Willdenow, Loureiro has

* *Prodromus Floræ Novæ Hollandiæ*, vol. i. p. 246.

† *Herrera*, *Dec.* I. Lib. IV. Cap. VII.

improperly classed together the *Citrus trifoliata* (vol. ii. p. 514) and the Limonia trifoliata, which is a very distinct species. The C. trifoliata Lour. is the Limonia trifoliata Willd.

The grand Chinese variety of the Cannabis sativa is not the same as the Cannabis indica of Lamarck (vol. iii. p. 21). It is however now well ascertained that this last plant is also only a variety of the ordinary Hemp. It is more ligneous and more narcotic; it yields very little thread, and wherever it is cultivated, it is merely for the purpose of smoking or chewing the leaves.

The *Uvillá* of Santa Fe, or the Cestrum, of which the fruit yields a beautiful black colour (vol. iii. p. 46) is not the Cestrum tinctorum of Jacquin, but a new species, called by M. Bonpland the Cestrum Mutisii. In the description of the plants discovered during the course of our expedition (*Nova genera et species plantarum*) we shall substitute another name to that of Arbutus Madroño (*Ibid.* p. 59) because the name of Madroño designates in Portugal and Spain the Arbutus Unedo. The wild Rice of Canada (vol. ii. p. 486) is probably a Zizania.

"The Cochineal of Rio Janeiro (vol. iii. p. 64) is the *Grana Silvestre*. It was first cultivated there in 1770 by M. Henriquez de Payra, of the Academy of Science of

" Lisbon. He has written a detached history " of it with many plates, the manuscript of " which is in the archives of the Academy " of Lisbon."

Note of M. Correa de Serra.

On the Yellow Fever of Vera Cruz.

The experiments made by M. Isaac Cathrall lead to a different result from that announced by M. Stubbins Ffirth (vol. iv. p. 197.) M. Cathrall considers the matter of the *vomito* as the effect of a secretion of the gall; but he observes that the patients affected with the yellow fever sometimes vomit black and flaky matter resembling coffee grounds, which transude from the mucous membrane of the stomach. *Analysis of the Black Vomit* in the *American Transactions*, vol. v. 1802, p. 117—138.

On the Quantity of Cotton annually imported into Europe.

I have endeavoured to collect in this work proper materials for the resolution of the important problem; what is the quantity of colonial produce which Europe absolutely requires in the present state of her civilization and manufacturing industry? I have already

shewn (vol. iii. p. 19) that the European manufactories annually consume three times the quantity of cotton which is generally supposed in works of political economy. The following table, published by M. Medford, proves that Great Britain alone used in her manufactories, in 1805, more than 61,580,000 pounds of cotton, and that she drew,

	English Pounds.
From the United States, -	31,943,268
the English West India Islands	16,192,088
Portugal (Brazil) -	10,000,000
the East Indies - -	2,432,483
other parts of the world	1,013,033
	61,580,872

On the Quantity of Gold and Silver absorbed by the Commerce with India.

According to the researches which I have made respecting the commerce of India and China, it appears to me that we may estimate the mass of precious metals which annually flow into Asia and the Eastern Coast of Africa, by the way of the Cape of Good Hope*, at seventeen millions and a half of piastres. A traveller† who long resided in India, China,

* See vol. iii. p. 451.

† *M. Felix de Sainte-Croix.*

and the Philippine Islands, and whose active curiosity was directed to every thing interesting to the manufacturing industry and commerce of the Europeans, was so good as to examine my result. After an examination of his notes, he found that the sums poured into India by different commercial nations, and converted into *roupees*, amount to eight or nine millions of piastres, of which at an average we may reckon

5,200,000 resulting from the English commerce,
2,000,000 - - - - - - - - - - Anglo-American,
600,000 - - - - - - - - - - Spanish,
400,000 - - - - - - - - - - Danish.

8,200,000

The Europeans imported into China,

	Piastres.
In 1804, - - - - - - - - - - - - - - - -	6,117,600
1805, - - - - - - - - - - - - - - - -	5,293,000
1806, - - - - - - - - - - - - - - - -	3,384,998

M. de Sainte Croix believes that in the present state of the commerce of China, Europe loses

	Piastres.
By the way of Canton and Macao,	2,500,000
By - - - - - - Emoui, - - - - - - - -	800,000
By - - - - - - Cochin-china, - - - -	500,000
	3,800,000

Adding to this sum the eight or nine millons

of piastres converted into *roupees* in India, and the silver absorbed in the commerce of the Europeans and Anglo-Americans with Japan, the great Archipelago of Asia, Persia, Bassora, Mascat, Moka, Mozambique and Madagascar, we find a loss of specie, which undoubtedly amounts to sixteen or seventeen millions of piastres.

The average price* of the *green tea* (Hayson, Singlo and Congo) was in 1807 at Canton 2 fr. 15 c. the Spanish pound, 128 of which make a *pikle;* and the mean price of *black tea* (Souchong, Campoy and Bohea) was at the same period 1 franc 68 centimes.

Speaking of the importation of Asiatic sugar into Europe and America†, I forgot to mention what the Anglo-Americans drew from the Dutch colonies of India. The quantity was

	Kilogrammes.
In 1800, - - -	1,417,130
1801 - - -	1,505,230
1802 - -	1,137,694

Mr. Buchanan, in the account of his interesting Travels in India‡, has thrown much light on the cultivation of the sugar cane in Asia. Four varieties are distinguished there,

* See vol. iii. p. 444, note.

† See vol. iii. p. 15.

‡ *Journey from Madras through Mysore*, vol. i. p. 95.

known by the names of *restali, puttaputti, maracabo,* and *chittunvasun,* some of which would well deserve to be introduced into the new continent. See also respecting the sugar of the provinces of Benares, Bahar, Rengpur, and Mednipur, *Remarks on the Husbandry of of Bengal,* p. 127—136.

On the Quantity of Gold and Silver used by Goldsmiths.

We have entered in the eleventh chapter (vol. iii. p. 451.) upon the important question; What is the quantity of gold and silver extracted from the mines of the two continents, and annually consumed by goldsmiths in different works? As old plate is frequently melted down, and the greatest part of the new plate is merely a change of form, we can only form a very vague idea of the quantity of precious metals which is every year added to that which for centuries constitutes the mass of wrought gold and silver. M. Necker thought that this augmentation was for France alone, about the year 1770, nearly ten millions per annum*. M. Peuchet affirms that at the period of the revolution the gold wrought into plate, lace and trinkets, annually

* See also *Gerboux sur la demonetisation de l'or,* p. 70.

amounted to twenty millions. The following are the most recent data:

In 1809 there was wrought in France,

	Gold Plate.	Silver Plate.
In the departments,	1,608 kil.	21,326 kil.
At Paris, -	1,026	40,541
	2,634	61,867

In 1810 there was wrought at Paris alone, 1,213 kilogrammes of gold, and 47,403 kilogrammes of silver. These numbers merely indicate the materials on which the duty was levied by the government; but we may safely conclude, that notwithstanding the activity and vigilance of the officers, there was always a third or fourth at least more used than the quantity registered at the mint. It appears, then that there is annually wrought in France by the goldsmiths, although the maritime war is an obstacle in the way of exportation,

		Francs.
In Gold,	3,300 kilogrammes, or	11,365,000
In Silver,	80,000 - or	17,760,000
	Total value,	29,125,000

It would be interesting to procure similar information respecting England, Germany Russia and Italy. For want of this information we suppose that the produce of gold and

silver used by goldsmiths in France, is to that of all Europe, in the proportion of one to four, and we find that the value of the total fabrication of Europe must amount to 120 millions of francs per annum.

I shall not discuss what part of these metals is derived from the melting of old plate but I believe we may conclude from the data we have laid down, that the quantity of gold and silver extracted from the mines of Europe and Siberia (vol. iii. p. 451.) is very far from replacing the mass of the precious metals annually employed in Europe in plate, lace and gilding, or dissipated by an extreme division, or actually lost.

On the Data which served for Foundation to the Geographical Maps and Physical Sections of this Work.

In the *Map of Mexico and the conterminous frontiers**, the following points are founded on astronomical observations made by me in the navigation from Cumana to the Havanah, in crossing the Bank of la Vibora, and in the passage from Batabano to Carthagena.

* See Geographical Introduction, p. xc.

Names of Places.	Longitude.						Latitude.		
	By time.			By an arc.					
	h.	′	″	°	′	″	°	′	″
The Havanah, the *morro*	5	38	52. 5	84	43	8	23	9	27
The Trinidad of Cuba	5	29	24. 5	82	21	7	21	48	20
Cape Saint Antony, N. W.	5	49	9. 5	87	17	22	21	55	0
Punta de Mata-Hambre	5	38	31. 0	84	37	45	.	.	.
Bocca de Xagua	5	31	37. 5	82	54	22	.	.	.
Cayo Flamingo	5	36	14. 1	84	3	32	22	0	0
Cayo de Piedras	5	34	28. 8	83	37	12	21	56	40
Cayman Grande, E. Point	5	31	56. 3	82	59	4	19	19	0
Cayman Brac, E. Point	5	28	30. 5	82	7	37	19	40	0
Cape Portland	5	17	14. 3	79	18	35	.	.	.
Las Ranas	5	13	34. 4	78	23	35	17	28	0
Recifs little known on the bank of La Vibora	5	22	55. 4	80	43	49	16	50	0

These positions were discussed in the *Recueil d'Observations Astronomiques*, which were jointly published by M. Oltmanns and myself, Vol. II. p. 7, 11, 13, 56, 66, 68, 109, 112. Cape Morant which according to M. de Puységur is in 17° 57′ 45″ of latitude, and 78° 35′ 23″ of longitude, was placed by M. Poirson 5′ farther to the east. The more easterly position is justified by several Spanish maps.

As to the position of the town of Washington, we have not thought proper to adopt the longitude assigned to it by the *Connoissance des Temps* for the year 1812, which is 78° 57′ 30″ or half a degree too far to the east. Were this position accurate, the geographers of the United States would be at a loss where to place Baltimore and Cape Hatteras. The occultation of Aldebaran, of the 21st January, 1793, observed at Washington, was calculated by Lalande, who deduced from it no doubt, the longitude of 5ʰ 15′ 51″; but the calculation was made a second time by M. Wurm *, who found 5ʰ 17′ 16″, or 79° 19′ 0″. This last result agrees very well with the observation of an eclipse of the sun made by M. Ellicot, in 1791, at George Town, near Washington, to the west, which gives 5ʰ 17′ 40″ or 79° 25′ 0″.

* *Zach, Mon. Corresp.* 1803, Nov. p. 382.

Although we have in general availed ourselves of the map of Arrowsmith for the eastern part of the United States, some slight changes have however been made from the researches of M. Ebeling, and information obtained by M. de Volney in his journey to the west of the Alleghanys.

The north west coast of North America, from Cape Saint Lucas to Cape Saint Sebastian, was traced agreeably to the learned researches of M. Oltmanns, in his work on the Geography of the New Continent *. We have attended to the bearings of Vancouver and Alexander Malaspina. The longitude of the Island of Guadaloupe appears somewhat doubtful. An *Ukase* which issued in 1799, under the reign of the Emperor Paul the 1st, declares that all the coast situated to the north of the parallel of 55° belongs to the Russian government. In this Ukase, the *north west coast* is constantly called the *north east coast of America,* an extraordinary denomination, which was believed to be justifiable from this circumstance, " that from Kamtschatka, we must sail to the east to find America." *Storch's Russland,* B. I. S. 145, 163, 265 and 297.

* *Oltmanns Untersuchungen über die Geographie des Neuen Continents (Paris, F. Schoell)* Th. II. S. 407. *Recueil d'Observations Astronomiques,* Vol. II. p. 592—619.

Although the results adopted by M. Oltmanns in the great Table of positions placed at the head of our *Recueil d'Observations Astronomiques*, do not sensibly differ from those which I have given above, Vol. I. p. cxxxiv—cxlv., it will be of utility however to specify here, the rectified longitudes of eight points of the western coast.

Names of Places.	Longitude.		
	°	′	″
Acapulco	102	9	33
San Blas	107	35	48
San Josef	112	1	8
Cape San Lucas . .	112	10	38
Cape Mendocino .	126	49	30
Punta del Año Nuevo	124	43	53
Monterey	124	11	21
Nootka	128	57	1

In the map of the *points of separation**, the isthmus of Panama, was in great part traced from the astronomical and trigonometrical operations of M. M. Fidalgo, Noguera, and Tiscar. See the beautiful map published by the board of longitude of Madrid, in 1805, under the title of *Carta esferica del mar de las Antillas y de las costas de Tierra Firme desde la isla de la*

* *Introduction*, p. cv.

Trinidad hasta el golfo de Honduras. According to the investigations of the expedition of Fidalgo, the Bay of Mandinga, extends towards the south, to the 9° 9′ of north latitude, and the Town of Panama is 7′ to the east of the Town of Portobello. Don Jorge Juan concluded from his bearings in the river Chagre, that Panama was situated 31′ to the west of Portobello*. According to the more recent map of the *deposito*, the isthmus is only 15 to the south of the Bay of Mandinga, or 14,258 toises in breadth; while by the map of La Cruz, this breadth is 55′ or 52,277 toises. Notwithstanding the great confidence which the bearings of the coast by M. Fidalgo undoubtedly merit, we must not forget, that his operations embrace only absolutely the *northern* coasts, which have not been hitherto connected with the southern coast by a chain of triangles, or by the transference of time. It is however by these means only, or by a great corresponding number of observations of satellites and occultations of stars, that we can be enabled to resolve the important problem of the difference of longitude between Panama and Portobello. I call this an important problem, because the longitude of Panama has an influence on the mouth of the Rio Chepo, and consequently on the po-

* *Voyage dans l'Amerique meridionale*, T. i. p. 99.

sition of that part of the gulf of Panama which corresponds to the meridian of the point of San Blas, and the fort of Saint Raphael de Madinga. By glancing at the configuration of the northern and southern coasts we easily perceive that although the mean direction is nearly from east to west, the breadth of the isthmus does not depend on the latitudes alone.

What is the height of the mountains at the point where the Isthmus is narrowest? What is the breadth of the Isthmus at the point where the chain of mountains is least elevated? These are the two great questions which an enlightened government should endeavour to resolve by employing an experienced observer whom it would be sufficient to furnish with a sextant, two time-keepers, and a barometer. No measure of elevation, and no level has ever yet been executed in the Isthmus of Panama; and neither the archives of Simancas, nor those of the council of the Indies contain any paper of importance calculated to throw the least light on the possibility of cutting canals between the two seas. It is unfair, therefore to accuse the ministry of Madrid of a wish to conceal matters of which they have never had any more knowledge than the geographers of London and Paris.

In the small map of Choco* which exhibits the canal dug by the priest of Novita, in a district called *Bocachica,* I have marked as uncertain, the direction of the coast which extends from the point of San Francisco Solano to the gulf of San Miguel. It is desirable that we should know more accurately the position of Cupica where the Spanish pilot, M. Gogueneche, made his settlement.

In the *map of false positions* we have distinguished the result drawn by M. Cassini from the observations of longitude contained in the voyage of the Abbe Chappe, which are to be found in the *Connoissance des Temps* for 1784, from the result adopted by the members of the academy of sciences who were entrusted with publishing the map of Alzate in 1772. We read on this map the following note:

" The voyage of M. Chappe to California " was the means of correcting the position of " different places, which it may be interesting " to specify here,

	Longitude from the Island of Fer.	North latitude.
" Nueva Vera Cruz†	285° 35′ 15″	19° 9′ 30″
" Mexico - -	278° 16′ 30″	
" San Josef -	267° 52′ 30″	22° 1′ 0″

* See vol i. p. 40.

† Undoubtedly a typographical error, 285° for 282°.

It has been recently asked "how much the "result of my observations for determining "the position of Mexico differs from the "result of M. Chappe?" I must here remark that that astronomer observed both at Vera Cruz and Saint Joseph, but not at Mexico itself; and that the observations of M. Alzate, which we owe the knowledge of to M. Chappe, differ from one another more than two degrees in longitude*.

In the plate which represents according to the mode of *Linear arithmetic* of M. William Playfair, the progress of the mining operations of gold and silver of New Spain† I have marked the year 1742 as uncertain. According to the table communicated to me at the mint of Mexico, the coinage amounted at that period to 16,677,000 piastres. This quantity differs extremely from the mass of precious metals coined between 1741 and 1743, and the comparison with the table which exhibits only the silver mining operations; leads me to believe that the number of 16,677,000 is inaccurate.

To the height of the two hundred points measured by me in the kingdom of New Spain, may be added the following heights extracted from the mineralogical travels of M. Sonneschmidt. This learned man only indicates the

* See Introduction, p. 30.

† Introduction, p. 130.

barometrical heights; but M. Oltmanns calculated them agreeably to the formula of M. La Place, supposing the column of mercury of the barometer of M. Sonneschmidt, 1 li., 9 too short*, and the temperature of the instrument 2° R. more elevated than the interior air.

* This result is founded on the comparison of barometrical heights indicated by M. Sonneschmidt in four places, to which I carried my instruments. The difference between our observations, is,

For Mexico	2. 7	1li. 9
Real del Monte	1. 9	
Pachuca	2. 0	
Guanaxuato	0. 9	

Names of Places.	Height of the barometer.		Temperature of the air.	Temperature of the air.		Observations.
				In toises.	In metres.	
	po.	li.	°. R.			
Cardonal - -	22	1.9	18.	1076	2097	Intendancy of Mexico N. E. part
Real del Doctor -	20	5.9	16.	1419	2767	ditto
Zimapan - -	22	11.9	18.	900	1755	ditto
Valley between Zimapan and the Doctor	24	10.9	24.	564	1099	ditto
Mecameca - -	21	0.9	14. 5	1286	2507	In the road from Mexico to the volcanos of Puebla.
Peak of the Fraile	15	5.9	1½	2567	5004	Part of Popocatepetl.
Superior limit of pines in the Popocatepetl	18	4.9	9½	1867	3639	At the Coffre near Perote, I found this limit at 2022 toises of height.

The elevation of 2456 toises which I have assigned to the *Sierra Nevada de Puebla (Iztaccihuatl)* is not founded on any direct measurement, but on angles of altitude azimuths and distances. M. Sonneschmidt was happier than myself. He carried his barometer to the summit of the Iztaccihuatl, and saw that the mercury remained at 16po 6li. 4; which gives supposing only a temperature of 6° 5 R. according to the hypsometrical tables of M. Oltmanns, 2317 toises or 4516 metres. I know not, however, whether M. Sonneschmidt measured the same part of the Sierra Nevada, with that of which I took angles of altitudes at the terrace of the school of mines of Mexico, and on the pyramid of Cholula*.

The farm of Pascuaro, near Zitaquaro† is according to M. Ontivero, 880 toises (1670 metres) of elevation above the level of the sea, the barometer remaining there at 23po 2li, and the thermometer at 19° R.

M. Alzate affirms‡ that he saw the barometer continue at the top of the Picacho de San Tomas, which is part of the Cerro de Axusco, at 18po 3li and "that the Picacho is consequently 4,300 *varas* elevated above the level

* *Receuil d'Observations Astronomiques*, vol. ii. p. 574.

† Intendancy of Valladolid.

‡ *Plan de la Vallie de Mexica de Siguenza*.

of the sea." M. Oltmanns found, by the formula of La Place, and supposing the temperature of the air 9°R, 1899 toises or 3702 metres. From the admirable researches of M. de Buch, it appears that perpetual snows in Norway under the 65° of latitude, never descend below the height of 700 toises. In Iceland, the limit is 480 toises.

On the amalgamation of silver minerals used in Mexico.

The following table indicates the quantity of mercury lost in the processes of amalgamation*, used in different districts of mines, to extract the silver from the ore. A loss (*perdida y consumo*) of 200 marcs, or a quintal of mercury is computed

	Marcs of silver.
In the mines of Guanaxuato, for - -	125
In the mines of the intendancy of Guadalaxara - - - - -	115
In the mines of Pachuca, Zacatecas, Sombrerete, Guadiana, Durango, Parral, Zichu, Tonala, Comanja, Zerralbo, Temextla, Alchichica, Tepeaca, Zimapan, Cairo and Tlapa -	100

* See vol. iii. p. 265.

In the mines of Chichiapa, Tetala, Tasco, Santa Theresa de Leiba y Banos, Ituquaro, Tehuistla, San Esteban de Albukquerque, and Chiconasi -	90
In the mines of Temascaltepec, Ayuteco, and Chautla de la Sal - -	85
In the mines of Zacualpa, San Luis Potosi, Guautla, Sultepec, and Tlapujahua - - - - - - -	80

The government regulates the distribution *(repartimiento)* of silver, according to these data, and the quantity of silver annually extracted from the different districts of mines.

The work of M. Sonneschmidt, which I announced in a former part of this essay (vol. iii. p. 252) has appeared since the publication of my investigations respecting the mines of New Spain, under the title of *Beschreibung des Spanischen Amalgamation oder Verquikkung des in den Erzen verborgenen Silbers, sowie sie bey den Bergwerken in Mexico gebräuchlich ist, Gotha* 1810. The author affirms that the amalgamation *por crudo y de patio* lasts in general in New Spain, not under eight days, and not above two months, supposing always that the sulphate of copper, or *magistral* is of good quality, and that a too low temperature of the air does not impede the action of the mercury on the

silver. The amalgamation of a quintal of ores, which contain from three and a half to four ounces of silver, costs in Mexico, including the loss of mercury, from five to six francs. M. Sonneschmidt, calculates the loss of mercury at ten, twelve, or fourteen ounces per marc of silver; and he reckons 8 ounces of mercury consumed (*azogue consumido*), and from 3 to 6 ounces lost (*azogue perdido*).

On the activity of the mints of France, compared with the mint of Mexico.

If the sixteen mints of France coin* less than the mint of Mexico alone, the cause is only to be imputed to the want of materials. At Paris, each stamper can execute 2500 pieces of 40, 20, 2 and 1 francs per hour: they strike 3000 in pieces of ½ francs, and 2000 in pieces of 5 francs.

The labour of the month of April 1796, at the mint of Mexico, amounted to the sum of 2,922,185 piastres, and that of the month of December, 1792, amounted even to 3,065,000 piastres.

This sum was partly in gold and partly in silver; and valuing the piastres at 5 francs 43 cent., the 3,065,000, would amount in French money, to - - 16,642,950fr.

* See vol. iii. p. 480.

In 13 days in the month of January, 1811, the coinage of gold and silver, amounted at Paris, to 7,996,454 francs, which would give for 26 days - - - 15,992,908fr.

Twelve mints of France could coin per day, if the materials were regularly supplied, 1,000,000 francs in silver, which in 26 days, would amount to - - - 26,000,000fr.

It is evident in this last estimate, that there is no question of gold coinage, which, if it took place, would yield a sum greatly superior to that of the 26 millions of francs of silver.

M. Necker in his work on the administration of the finances of France, has given the quantity of gold and silver, coined from 1726 to 1780. We shall here give an exact account of the *general coinage of all the mints of France*, from 1726 to 1809.

The coinage from 1726 to 1785, was in gold 986,643,888 livres tournois. More than two thirds of this gold were recoined in the nine following years; for the gold coinage amounted, between 1785 and 1794, to 751,281,504 francs.

The silver coinage from 1726 to 1794 amounted to 2,072,022,441 livres tournois.

The total value of the different coinages

of gold and silver, base coin and bells, in all the mints of France, between 1726 and 1794 amounted to 3,849,026,184 livres.

From 1795 to 1802, there was coined in pieces of 5 francs, with the inscription, *Hercule et la liberté*, to the value of 106,237,255 francs.

The coinage, between 1802 and 1809 amounted in gold to 173,219,700 francs; and in silver to 259,454,874 francs, or at an average for the last eight years to more than 54 millions of francs per annum. From these particulars it appears, that in the space of eighty-three years, from 1726 to 1809, the value of the total gold, silver, and copper coinage of France, amounted to 4,410,396,000 francs.

From December 1801, till August 1804, Spain received from its colonies, 107,308,152 piastres in gold and silver, and 63,350,590 piastres in agricultural produce. From 1788 to 1795 the total importation was only at an average, from 35 to 45 millions of piastres per annum (see p. 124 of this volume, and *Edin. Review*, 1810, p. 77.)

I shall give at the end of the supplement, some elucidations respecting the estimates of the produce of the mines, as well as respecting the weights and monies. The produce of the mines of Spanish America, varies a seventh

from year to year, or more than 500,000 marcs of silver. We have estimated this produce for the Spanish and Portuguese colonies, at 17,291 kilogrammes in gold, or 75,217 Castillian marcs, and at 795,581 kilogrammes or 4,460 Castillian marcs of silver, which are equal together to 43¼ millions of piastres. Europe, Siberia, and America furnish per annum 19,126 kilogrammes in gold, and 869,960 kilogrammes in silver, or 3,554,447 French marcs, or to the value of 259,200,000 francs. I ought to observe, that the three tables, vol. iii. p. 389, 394, and 397, indicate fine gold and silver; but that the two tables, vol. iii. p. 291, and 292 drawn up at the mint of Mexico, contain Castillian marcs, *of silver of piastres*, or very nearly pure silver; for, according to my tables the coinage in 1796, 1797, and 1799, was 2,854,072; 2,818,248; and 2,473,542 Castillian marcs in silver, while the lists printed at Mexico, make the coinage for these same three years amount to 24,346,772; 24,041,180 and 21,096,031 piastres. In the calculations in vol. iii. p. 172, 173, 174, 362, 378, 420, 421, 427, and 428. I have reduced the piastres according to the custom of the country, into Castillian marcs, dividing by 8½, so that I have in the same manner only obtained marcs of silver *of the piastre fineness*, or 0.903. The mass of pure silver, extracted within these three

centuries from the mines of America, would form a sphere of a diameter of $20\frac{47}{100}$ metres. The Castillian marc contains 0.^{kil}229,881. Out of the Castillian marc $8\frac{1}{2}$ piastres o are coined; and as this marc corresponds to 229^{gr}.881 of the new French weight, the weight of the piastre is 27^{gr}.045. As the title ought to be 10den. 20gr., or 0.903 the piastre is worth, considering it as perfect in weight and title, 5 francs, 43 cent. The Castillian marc of pure gold is worth $145\frac{88}{100}$ piastres; and the marc of pure silver is worth $9\frac{4}{10}$ piastres. We have already estimated the kilogramme of pure gold at 3444 francs 44^{cent}. 444. and that of pure silver, at 222 francs 22^{cent}. 222. As in the mines and mints of America, they do not always compute marcs of gold and silver at the same standard or title, we are embarrassed whenever we labour on memoirs in which the standard is not expressed. The error however cannot exceed a tenth, a quantity which does not appear so sensible when we take averages of several years, and when we reflect on the mass of precious metals, on which the fifth is not paid.

ADDITIONS.

WHEN the impression of this work was completely finished, I received by the way of Spain, the states of commerce printed at Vera Cruz in the years 1804, 1805, and 1806. Mexico continued in the enjoyment of peace till 1805, but since that period, the maritime war, and other political circumstances, have very much impeded commercial transactions. Although a state of things so extraordinary has resulted from this position, that the *Balance of Commerce*, can give us no information respecting the increase or diminution of the national wealth, it appeared however to me interesting, to present here the most recent statistical information which I could obtain respecting that part of the Spanish Colonies in America.

Commerce of Vera Cruz in 1804.

		Piastres.	Piastres.
Importation from Spain	In national produce	10,412,324	14,906,060
	In foreign produce	4,493,736	
Importation from America			1,619,682
Exportation from Vera Cruz	for Spain	18,033,371	21,457,882
	for America	3,424,511	
Total amount of the Commerce			37,983,624

Among the national productions imported at Vera Cruz from Spain, there were 48,735 hogsheads of spirits, the value of which is 1,235,130 piastres; 43,162 hogsheads (value 837,776 piastres) of red and white wine; 20,946 arrobas (value 78,456 piastres) of oil; 19,721 pounds (value 287,057 piastres) of saffron; 79,200 bottles (value 78,456 piastres) of beer; 136,381 reams (value 486,583 piastres) of paper; 73,827 quintals (value 812,707 piastres) of iron; 3108 quintals (value 53,052 piastres) of steel; and silks, woollens, linens, muslins, and hats contained in chests, which the merchants are not obliged to open at the custom-house, to the value of more than six millions of piastres.

Among the foreign productions imported from Spain, there were silks, cottons, cloths, and other stuffs, to the value of four millions of piastres; 47,236 pounds (value 163,171 piastres) of cinnamon; 28,167 pounds (value 85,952 piastres) of cloves; and 2997 quintals (value 51,477 piastres) of steel.

Among the American productions imported from the other Spanish Colonies at Vera Cruz, there were 27,814 arrobas (value 576,836 piastres) of wax from the Havanah; 1928 arrobas (value 26,068 piastres) of wax from Campeachy; 13,432 fanegas (value 461,845 piastres) of cocoa of Tabasco; 8,141 fanegas (value 2,055 piastres) of cocoa of Caracas

49,535 quintals (value 100,219 piastres) of Campeachy wood; and 18,496 fanegas (value 37,845 piastres) of salt.

Among the indigenous productions exported from Mexico for the Mother Country, there were 381,509 arrobas (value 1,097,505 piastres) of sugar; 11,737 arrobas (value 1,220,193 piastres) of fine cochineal (the result of a very moderate harvest); 867 arrobas (value 24,414 piastres) of *granilla;* 464 arrobas (value 5,816 piastres) of cochineal in dust; 189,397 pounds (value 367,302 piastres) of indigo; 37,797 quintals (value 77,485 piastres) of Campeachy wood; 1,818 quintals (value 62,411 piastres) of Jalap; 7,169 quintals (value 96,734 piastres) of Sarsaparilla; 1,014 thousand (value 111,195 piastres) of Vanilla; and 3,786 fanegas (value 124,819 piastres) of cocoa of Tabasco. There were besides exported 18,801 fanegas (value 460,585 piastres) of cocoa of Guayaquil. The exportation of coined silver amounted to 16,847,843 piastres. The Havanah received from Vera Cruz, 26,371 *trosos* (value 417,709 piastres) of Mexican flour.

In 1804 there entered Vera Cruz from Spain 107 vessels; from the Spanish Colonies in America 123. In this state neither the 13,500,000 piastres exported on account of the king of Spain, nor the 20,000 quintals of mercury

imported on account of the government, have been included.

Commerce of Vera Cruz in 1805:—Importation from Spain in national produce, 1,514,473 piastres (of which in paper alone 60,617 reams, or 582,769 piastres); in foreign produce and goods 574,963 piastres. Importation from America 1,262,907 piastres, (whereof in Havanah wax alone 19,964 arrobas, or 547,304 piastres). Exportation for Spain 10,200 piastres; for America 330,546 piastres. Exportation in neutral vessels 562,048. Total amount of the commerce 4,355,137 piastres. Number of vessels entered at Vera Cruz from Spain, 27, from America, 77.

Commerce of Vera Cruz in 1806:—Importation from Spain in Spanish productions 1,815,579 piastres; in foreign produce 327,295 piastres. Importation from America 1,499,244 piastres. Importation in neutral vessels 3,485,655 piastres. Exportation for Spain 803,037 piastres; for neutral ports 4,101,534 piastres; consequently, total importation 7,137,773 piastres. Total exportation 5,478,762 piastres. Total amount of the commerce, 12,616,535 piastres. There entered Vera Cruz in 1806 from Spain, eight embarcations; from the other Spanish Colonies of America 90; and from neutral ports, 37.

From this state of commerce, and those which I have already given in this volume p. 33. et seq., it follows that in the three years of peace, 1802, 1803, and 1804, the total importation of Vera Cruz amounted at an average (abstracting the fraudulent commerce) to 20,700,000 piastres; and the exportation, not including the coined or wrought gold and silver, to 6,500,000 piastres.

	millions.		millions.
1802 Importation -	21½	Exportation - -	9
1803 - - - -	23	- - - - -	5⅕
1804 - - -	17½	- - - - -	5

These numbers confirm what we have advanced in the 12th chapter, respecting the general balance of the trade of New Spain (page 111 of this volume). That vast country in the present state of its civilization and manufactures, requires foreign produce and goods to the value of *a hundred, or a hundred and ten millions* of francs. Allowing full liberty to the trade of Acapulco, and San Blas with China and India, Mexico may draw cottons, silks, paper, and spices, and perhaps even mercury directly from Asia; and this circumstance will diminish the importations from Europe, more than *twenty millions* of francs. The more the connections of America with oriental Asia are increased, the smaller will be the sum of

gold and silver annually poured by the New Continent, into the commerce of Europe. The effects of this revolution in commerce, will be more promptly felt by us, than those produced by the establishment of new manufactures, and the tardy awakening of indigenous industry.

For centuries the commerce of Mexico, with the Mother Country, had never been so impeded as in 1805. In this year, the value of exports from Vera Cruz for Spain, only amounted to 12,000 piastres, while at an average it amounts to 22 millions of piastres. Hence during the year 1805, the price of paper, iron and steel, was almost tripled.

	1802	1803.	1804.	1805.	1806.
	Piast.	Piast.	Piast.	Piast.	Piast.
Price of white paper per ream	$3\frac{5}{10}$	$3\frac{5}{10}$	$3\frac{5}{10}$	$9\frac{7}{10}$	$8\frac{2}{10}$
Of iron per quintal	9	11	10	19	24
Of steel per quintal	$18\frac{8}{10}$	18	17	40	30

In 1806, a period during which the entry of neutral vessels was permitted at the port of Vera Cruz, Mexico received by these same vessels according to the Custom-house books, in linens (*bretañas, bramantas, caserillos, listados, ruanes, platillas, creas, and estopillas*) to the value of 1,079,714 piastres; in cottons and

muslins (*acolchados, cambray, musolinas, mahones, zaragas, and pañuelos de Bayaja y Madras,*) to the value of 1,554,647 piastres; and in woollens, to the value of 164,989 piastres.

Notwithstanding the rise in the price of iron, the working of the mines has been continued with the same activity, as before the commencement of the last war. There has been coined at the mint of Mexico in gold and silver:

In 1804, 24,007,789 piastres; in 1805, 27,165,888 piastres; in 1806, 24,736,020 piastres.

Of the 24,007,789 piastres coined in 1804, 23,513,079 piastres or 2,756,657 marcs were silver, and 494,710 piastres or 3,633 marcs were gold.

The coinage of the year 1805 having even exceeded that of 1796, (Vol. iii. p. 290.) it may be proper to specify here the quantities coined each month, (Vol. iii. p. 481, and Vol. iv. p. 258. et seq.)

Quantity of Gold and Silver coined at Mexico, from the 1st of January, to the 1st December, 1805.

Months	Gold Piastres.	Silver			
		Piastres.	Reals.	Piastres.	Reals.
January -	- -	860,026	5¾	860,02	5¾
February -	- -	1,891,492	4	1,891,49	4
March - -	- -	2,234,021	4½	2,234,021	4½
April - - -	- -	1,890,883	5¼	1,890,883	5¼
May - -	- -	2,317,683	5½	2,317,683	5½
June - -	- -	2,045,141	6½	2,045,141	6½
July - -	- -	2,309,513	6¾	2,309,513	6¾
August - -	371,766	2,106,236	0½	2,478,002	0½
September	236,304	2,489,358	6¼	2,725,662	6¼
October -	464,768	2,555,402	1	3,020,170	1
November	- -	2,110,793	5¼	2,110,793	5¼
December	286,976	2,995,520	0	3,282,496	0
Total	1,359,814	25,806,074	3¼	27,165,888	3¼

In the year 1806, the coinage was:

In Gold - - -	1,352,348 piastres.
In Silver - -	23,383,672
	24,736,020

On this sum, the duties of coinage and signiorage amounted to 2,073,753 piastres. Now the price of the labour, and the expence of coinage, having only been 462,318 piastres, it follows that in 1806, the net profit of the mint of Mexico, with that of the house of separation (*casa del apartado*), was 1,611,434 piastres (See p. 209 of this volume).

According to a note drawn up by M. Campo Marin, there was coined at Mexico, from the 1st January, 1772, to the 31st December, 1803, gold and silver to the value of 648,535,219 piastres; viz.: 623,404,405 piastres, or .73,104,242 marcs of silver, and 25,130,814 piastres, or 184,581 marcs of gold. In these estimates, the gold is only calculated at 136 piastres per marc, and the silver at *the fineness of piastres*, as is customary at the mint of Mexico, Vol. iii. p. 291, 296 and Vol. iv. p. 261 et seq. The coinage was at an average during the thirty last years preceding 1803, 20,266,725$\frac{10}{12}$ piastres.

The road from Vera Cruz to Xalapa, and from thence to Perote, begun in the month of February, 1803, (p. 6. of this volume) has been continued with great activity. It was executed in 1806, between las Vigas, and la Rinconada, for a length of 79,228 varas, or 60,551 metres*. As the work was executed by a great number of condemned criminals, an hospital was established at la Rinconada, capable of receiving 1700 patients. The arches of the bridge of the Rio de la Antigua, begun near the Ventilla, were ruined in the extraordinary swell which took place in 1806. The *Consulado* of Vera Cruz did not hesitate

* 198,601 feet. *Trans.*

to construct new pillars more solid than the former, and closer to one another (p. 11 of this volume). The beautiful giratory light house (*fanal giratorio de la Vera Cruz*), of which I spoke in the twelfth chapter (p. 83 of this volume), was completed in the month of May, 1804. It will require nearly 3000 piastres annually to keep it up. (See *Correo mercantil de la Vera Cruz*, 1804, N^os^. 65 and 66.)

What is said concerning the hospitals in the *Balanzas del comercio de Nueva España*, for 1804, 1805, and 1806, confirms what I have already said (p. 182 and 195 of this volume), on the mortality of Vera Cruz. In 1804 there entered the hospitals of that town 6075 patients, of whom 919 died. The hospital of Saint Sebastian received during the same year, 361 patients of *vomito negro*, of whom 232 were cured. Among the 127 who died, there were at least 40 who expired a few hours after being carried to the hospital. Frictions of oil of olives, were very successfully employed in the royal hospital. In the year 1805, the epidemic of the vomito almost entirely ceased towards the end of the month of June; and in 1806, of 8600 patients received into the different hospitals, only 27 were attacked with the yellow fever, although the season was extraordinarily rainy (p. 197 of this volume).

State of the Hospitals of Vera Cruz, in 1806.

Names of Hospitals.	Patients.	Deaths.	Average mortality.
			Per cent.
San Carlos -	6382	85	$1\frac{1}{3}$
San Sebastian -	2010	231	$11\frac{49}{100}$
Loreto (women)	281	49	$17\frac{44}{100}$

At Mexico in 1805, there entered the 12 hospitals, 18,398 patients, whereof 1773 died. The mortality was then $9\frac{6}{10}$ per cent. At la Puebla, it was $15\frac{7}{10}$; for of 6566 patients who entered in 1806, the hospital of San Pedro, 1032 died.

The total number of deaths at Vera Cruz, including the hospitals, in 1806, was 663. Now according to the calculation of M. Don Jose Maria Quiros, the population of the town at that period was composed of 35,510 souls; viz. habitual population 20,000; sailors and seafaring people 3640; muleteers necessary to take care of 49,139 mules, and other beasts of burden, for the carrying of goods from Perote and Orizaba, to Vera Cruz, 7,370; strangers, travellers, and militia, 4,500 individuals. Hence the average mortality, at a period when the epidemic of the vomito did not prevail, was only $1\frac{9}{10}$ per cent. In 1805, it amounted to $2\frac{9}{10}$ per cent, the number of deaths being 1049, and the total population 36,230 souls. It is

true this population contained at most 5000 children, from one to ten years of age, and that the mortality is every where less considerable, where the majority of the inhabitants are young and robust men, accustomed to fatigue, and change of climate. However all these calculations and considerations which we have been stating, sufficiently prove that *in years when the yellow fever does not commit its ravages*, the port of Vera Cruz is not more pernicious to health, than the greater number of maritime towns situated under the torrid zone.

INDEX.

*** The large Roman numerals refer to the volumes; the small Roman numerals to the pages of the Geographical Introduction in the first volume; the Arabic numerals to the remaining pages of the work; and the asterisks and other marks between two parentheses indicate the notes.

Abad (Don Manuel) Great vicar of the Archbishoprick of Mechoacan—Information furnished by him to the author, I, lxxxviii. II, 464—His zeal for the introduction of inoculation, I, 112—His observations respecting the Volcan de Colima, II, 228.

Abincopa (Gonzalo) discovered the mercury mine of Huancavelica, III, 310.

Abra de San Nicolas, a cut made in a mountain to improve the climate of Acapulco, IV, 145.

Academia de los nobles artes de Mexico, its influence on the taste of the nation, I, 212—Its palace, II, 51.

Acapulco Town and Port—Its geographical position, I, xxxiv—Its population, II, 187—Description of the Port IV, 56—Its commerce with Guayaquil and Lima, IV, 63—Obstacles to it from the dangers of navigation, IV, 64—Commerce with Manilla, IV, 71—Climate of this Port, and causes of its being free from the yellow fever, IV, 144.

Acatl (*First*) To what year that period corresponds, II, 18 (*).

Acazonica, Farm of the Jesuits, II, 264.

Acha (Sierra de la) II, 285.

Acoclames, Indian savages, II, 285.

Acolhues, arrival of this people in Mexico, I, 133.

Acordada, edifice of Mexico, II, 145.

Acosta, the amount, according to this author, of the fifth paid to the king, from the produce of the mines of Potosi, III, 370.

Acuña (Juan de) Marquis de Casa Fuerte, the only viceroy of Mexico, born in America, II, 104 (†).

Administration (public), expence which it occasions, IV, 230, 231.

Aerolites, masses of malleable iron, which appear to be *Aerolites*, III, 292—See *meteoric iron*.

Agave, see Maguey.

Agriculture, its state in New Spain, II, 399—Influence of the mines on its prosperity, II, 405—Annual amount of its produce, III, 2—Obstacles to its improvement, III, 101—See also *plants* and *vegetables*.

Aguasarco, mountain, II, 213.

Aguas calientes, town, II, 231.

Aguirre (Don Guillermo) member of the audience of Mexico, gave the author the Manuscript Journal of Crespi and La Peña the companions of Perez, II, 363.

Ahahuete, (Cupressus disticha) celebrated for its size, II, 42, 196.

Ahuitzotl, king of Mexico, constructs the great Teocalli of Tenochtitlan, II, 19—His imprudence occasions an inundation, II, 118.

Alamos, (los) town, II, 306.

Alatlauquitepec, mines, II, 203.

Albaradon de San Lazaro, constructed by Velasco I. viceroy of Mexico, II, 317.

Alcavalas, indirect impost—The Indians freed from it, I, 186—In what it consists, IV, 93. Its annual produce, IV, 211.

Alcohuacan, the Mexican name of the town of Tezcuco II, 57 (*).

Alcosac, remains of one of the small pyramids surrounding the great Teocalli of Cholula, II, 196.

Aliares, (Pedro) lands in America, II, 501.

Almanza, (Martin Enriquez de) viceroy of Mexico, II 114.

Almonds, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Almoxarifazgo, a duty paid on commodities, IV, 93—Its annual produce, IV, 214, 216.

Alvarado, river, I, 72.

Alvarado, (Pedro de) famous leap which he made to effect his escape, II, 73.

Alvarado, river, see *Papaloapan*,

Alvarez, (Juan) his project for draining the valley of Mexico, II, 135—He obtains permission to extract gold from the Volcan de Granada, III, 477.

Alzate, (Josef Antonio) how he determined the position of Mexico, I, xxx; that of Vera Cruz, I, xxxii—His maps of the archbishoprick of Mexico, I, lxxv, lxxvii—His plan of the environs of the city of Mexico, I, xcvi—Character, I, 219—His opinion as to the height of Cuernavaca, II, 185 (†).

Amalgamation, used in the mines of Mexico, III, 252—281—Expence per 100 quintals of minerals, III, 350—The mode used in the mines of Peru, *ibid*; and at Potosi, III, 377.

Amazons, (river of) favourable for the fraudulent extraction of silver in Peru, III, 392.

Americans, importance attached by the Creoles to this name, I, 205.

America, view of its population, IV, 323.

America, (Spanish) comparison of its extent with that of the Russian empire, and English possessions in Asia, I, 7—Its division into nine governments, I, 8—Annual amount

of its produce in gold and silver, III, 336—Comparison of its extent, population, and revenue, with those of the English possessions in India, IV, 46—Value of its exports for the Port of Cadiz, from the peace of Amiens, to the 31st December, 1802, IV, 126—Details respecting its extent and population, IV, 322.

America, (Russian) description of the country, II, 388.

Anahuac, country of which it was composed, I, 12—Its extent compared with that of New Spain, I, 90—Its population, I, 91—See also *Mexico, (valley of)*.

Anas, (moschata) a native of Mexico, III, 56.

Anchovies, amount imported into Vera Cruz in 1802, IV, 33—See also *fish, (salt)*.

Andageda, auriferous river of Choco, III, 207.

Andes, see *Cordilleras*.

Angangueo, mines, II, 226.

Anis-seed, quantity exported from Mexico in 1803, IV. 49.

Annates, levied by the king in Mexico; their annual amount, IV, 214.

Ansa, (Don Vicente de) information furnished by him, I, lxxxviii—He finishes a great level at Tasco, III, 139.

Antequera, see *Oaxaca*.

Antigua, village, *II, 263*.

Antillon, (Don Isidro de) how he fixed the longitude of Mexico, I, xxiv; that of Vera Cruz, I, xxxii; of Acapulco, I, xxxv; of Santa Fe, I, lxviii.

Antimony, mines which supply it, III, 299.

Antioquia, (Province of) gold furnished by it, III, 383.

Antipathy which prevails between the inhabitants of the plains, and those of the table land of the Cordilleras, IV, 54.

Apaches, savage Indians, I, 175—Their abodes, II, 270, 282.

Aqueducts, which convey fresh water to Mexico, II, 44—Aqueduct of Tezcuco, II, 46 (*); of Xamapa, II, 265.

Arciniega, his project for preserving Mexico from inundations, II, 122.

Arias, (Alonso de) superintendant of the arsenal entrusted with the works of the Desague, II, 130—Opposes the project of Martinez, II, 165.

Arieta, (Don Juan Baptista) proprietor of the amalgamation work of Talenga, III, 351 (†).

Arispe, town, II, 305.

Army, see *force, (armed)*.

Arosbide, (Josef) sails from Manilla to Lima by a direct route, IV, 78.

Arricivita, (Domingo) his chronicle of the college of the Propaganda at Queretaro, II, 300 (†).

Arrowsmith, how he fixed the position of Mexico, I, xxv; of Vera Cruz, I, xxxiii; of Acapulco, I, xxxvii—His error respecting the Volcan d'Orizaba, I, xliv.

Arsenic, mines which furnish it, III, 299.

Arteaga, (Ignacio) his expedition to the north of America, II, 366.

Arton, (Platano) species of banana, II, 419.

Asanza, (the Chevalier Don Miguel de) causes the manuscripts respecting the Travels to California to be collected, I, liv. (‡); accompanies the visitador Galvez in his journey to California, II, 325; is arrested, II, 326; named viceroy of Mexico, *ibid.*—Eulogy of his administration, IV, 234.

Asentzio (Manuel) instructor of Velasquez, II, 219.

Asientos de Ibarra, mines, II, 230.

Atahualpa, Inca of Peru—His name is given to the cock, III, 54.

Atienza, (Peter de) planted the first sugar canes in Mexico, III, 3.

Atlixco, village of the intendancy of Puebla, where there is a famous cypress, II, 196, 202.

Atolli, soup made of maize flour, II, 444.

Atrato, river of Choco—Its mouths serve as an emporium for the smuggling of gold and silver, III, 391.

Attacappas, county of Louisiana, boundary with Mexico, II, 280.

Atzacualco, one of the quarters of Tenochtitlan, II, 28.

Axajacatl, king of Mexico, destroys the kingdom of Tlatelolco, II, 26.

Axcotlan, a rich Indian family at Cholula, I, 186.

Axes, see *Igname*.

Axolotl, reptile, nourishment of the Aztecs, II, 16.

Ayala, (*Gabriel de*) a baptized Indian, author of a manuscript on the history of Mexico, II, 74 (*).

Ayala, (*Juan de*) his voyage to the north west of America, II, 365.

Azogue, village of New Grenada, which furnishes mercury, III, 307.

Aztecs, people of Mexico—Hypothesis as to their origin, I, 135—Their migrations, I, 133; II, 16, 302—Their establishment in the Islands of Acocolco, II, 16; at Tenochtitlan, II, 17—Three stations made by them in their migrations, II, 303.

Aztlan, the original country of the Toultecs, I, 133.

B,

Baize (*Bayettes*) quantity exported from Mexico in 1803, IV, 49.

Balance, annual, of the commerce of New Spain, IV, 111—General since 1748, IV, 122—See *commerce*.

Balms, amount exported from Mexico in 1802, IV, 37; in 1803, IV, 48.

Banana, of its cultivation, II, 414—Three species found, II, 417—Its utility, II, 423—Is an object of commerce, II, 427.

Baños, (Count de) viceroy of Mexico, becomes monk, II, 142.

Baquetes, influence which the edict of free trade has had on their exportation, IV, 100.

Baraderas, river, called also Crocodile River, II, 244.

Barba, (Alonzo) parish priest of Potosi, inventor of hot amalgamation, III, 266—Quantity to which he makes the silver extracted from the Cerro de Potosi amount, III, 191.

Barcos, (Father) author of a history of California, II, 234 (*).

Barenadores, class of miners, I, 124.

Barreiro, (Don Josef) governor of Acapulco—Cut in a mountain made by him for improving the climate of that port, IV, 45.

Barrington, published the Journal of the Pilot Maurelle, II, 365.

Batates, their cultivation in Mexico, II, 503.

Bauza, (Don Felipe) his opinion as to the position of Santa Fe, I, 82.

Beer, amount imported at Vera Cruz in 1802, IV, 34; in 1803, IV, 45 and 46.

Beasts of burden employed for carrying goods in preference to carriages, IV, 2.

Bees, how reared in Mexico, III, 61.

Bendavales, periodical winds which prevail in the Great Ocean, IV, 60.

Berendo, a species of goat of New California, II, 327—See also *Zoology*.

Berlangas, (Thomas de) a monk, introduces the banana into America, II, 415.

Berrios (los) a small lake near Xalapa, II, 268.

Births, their proportion to the deaths in Mexico, I, 103—To the population, I, 105—Example of the manner in which the registers of births are kept in Mexico, IV, 289.

Biscaina, description of the mine of, III, 216.

Biscaino, (Sebastian) see *Viscaino.*

Blanco, (Rio) river, II, 270.

Blankets, amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.

Boca Chica, one of the entrances into the port of Açapulco, IV, 57.

Boca Grande, one of the entrances into the port of Acapulco, IV, 57.

Boca de San Gregorio, part of the *Desague de Huehuetoca,* II, 152.

Bolaños, mines, III, 122.

Bolson de Mapimi, a mountainous district, II, 271.

Bombon, mines, III, 341.

Blood (mixed) different species of in Mexico, I, 246.

Bonilla, (Don Antonio) his manuscript memoir respecting the voyages of the Spaniards to the north west of America, II, 359.

Bonilla, (Gabriel Lopez de) how he fixed the longitude of Mexico, I, xxvi.

Boot, (Adrian) a Dutchman, entrusted with the hydraulical works of Mexico, orders the Desague of Nochistongo to be abandoned, II, 131.

Branciforte, (Marquis de) viceroy of Mexico, causes a statue of Charles IV. to be erected, II, 40 (*)

Brandy, amount annually imported into Vera Cruz, IV, 31; in 1802, IV, 33; in 1803, IV, 44.

Bravo, (Rio) see *Rio del Norte.*

Brazil, its mines, III, 392, 418—Its population, IV, 323.

Bread-fruit tree, unknown in Mexico, II, 513.

Breña (la) group of rocks near Durango, II, 292.

Bucareli, (Antonio) viceroy of Mexico, orders the territory between the Bar of Huasacualco and the Roads of Tehuantepec, to be examined by engineers to discover whether there were any means for establishing a communication between the two seas, IV, 21.

Bucareli, (Puerto de) a port discovered by Quadra, II, 365.

Buena vista, a military post, II, 299.

Buenos Ayres, (Viceroyalty of) produce of its gold and silver mines, III, 353—Balance of its trade, IV, 128—Net revenue which the king draws from this vicerovalty, IV, 240—Its population, IV, 323.

Butter, amount imported at Vera Cruz in 1802, IV, 35: in 1803, IV, 46.

C.

Caamano, (*Don Jacinto*) his expedition to the north west coast of America, II, 384.

Cabildo, (*Libro de el*) manuscript of 1524, II, 22 (§).

Cables, imported into America—See *cordage.*

Cabrera, (*Father Manuel*) superintendant of the Desague de Huehuetoca, II, 143.

Cabrillo, (*Juan Rodriquez*) his voyage to New California, II, 338 and 360.

Cachalot; or *spermaceti whale fishery*, on the coasts of Mexico, in the hands of the English and Anglo-Americans, III, 83.

Caciques, noble Indians, I, 179—Oppressions which they exercise over the tributary Indians, *ibid.*

Cacomite, species of Tigridia—Its cultivation in Mexico, II, 505—See *vegetables.*

Cactus, different species on which the cochineal feeds, III, 71—See also *vegetables.*

Cadena, (Count de) causes the first electrical conductors to be constructed in Mexico, III, 472.

Cadereita, town of the intendancy of Mexico, II, 188.

Cadereyta, (*Marquis de*) viceroy of Mexico, assigns to the chest of the Desague, the produce of an impost on liquors, II, 140.

Cajohuacan, a favourite place of Cortez, II, 78.

Calderon, (Father Francisco) his project for draining the valley of Mexico, II, 136.

Calicoes, manufactured in Mexico, III, 461.

California, its coasts discovered by Cortez, I, li—Voyage to this country by Chappe, Doz, and Velasquez, I, lii—History of the discovery of that province, II, 319—Its climate, II, 326—Its mountains, *ibid.*—Its pearls, II, 328—Settlements formed there by the Jesuits, II, 330—Tribes who inhabit it, II, 331—Its villages, II, 333—Its mines, III, 128.

California, (*Gulph of*) geographical position of several points of its coast, I, lviii.

Californians, their divinities, II, 331.

Calle, (*Juan Diaz de*) memoir presented by him to Philip IV, II, 109 (*)—His researches respecting the invention of amalgamation, III, 254.

Calle, (*second*) to what year that period corresponds, II, 18 (*).

Camacho, (*Don Josef*) his voyage to New California, I, xciii.

Camargo, (*Diego Muñoz*) his manuscript work on Mexico, II, 74.

Camburi, species of banana, II, 417.

Camels, introduced into Peru, IV, 14.

Camotes, see *batates*.

Campomanes, his calculations respecting the quantity of gold and silver imported into Spain, III, 389.

Canary (*Islands*) their gross revenue, IV, 241—Their territorial extent and population, IV, *ibid.*

Candles, (*wax*) amount imported into Vera Cruz in 1802, IV, 35; in 1803, IV, 45.

Cane, (*sugar*) its cultivation in Mexico, III. 2—Carried on without negroes, III, 8—Its produce, III, 11—See also *plants and vegetables*.

Canizares, (*Joze*) his map of California, I, lxxxi.

Cannons cast at Manilla, and transported to Vera Cruz, IV, 21.

Cañon de los Vireyes, gallery of the Desague de Huehuetoca, II, 152.

Canteens, amount imported at Vera Cruz in 1802, IV, 33 and 35; in 1803, IV, 45 and 46.

Capers, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Capitals, laid out by the clergy on lands, III, 100.

Capitations of the Indians, its annual produce, IV, 212.

Capuces, tribe of Indians, II, 205.

Caracas, (*Capitaneria generale de*) annual balance of its commerce, IV, 128—Number of slaves, IV, 129—Its gross revenue, IV, 241—Population, IV, 322.

Caravajal, oidor at Mexico—His mineralogical collection, II, 51 (*).

Carcay, mountains, II, 284.

Carneros cimarones, animals of the mountains of California, II, 327.

Caroline, (*Islands*) imaginary archipelago, II, 323.

Carthagena, annual balance of its commerce, including the small neighbouring ports, IV, 119.

Cards—Produce of duty on, IV, 214.

Casa del apartado at Mexico, or house of separation—Description of that edifice, III, 483.

Casa Fuerte (Marquis de) See Acuña.

Casas grandes del Rio Gila—Ruins of an edifice constructed by the Aztecs, II, 301.

Casas grandes of New Biscay, third residence of the Aztecs, II, 302, 303.

Casasola (M. de). His collection of voyages to California, I, liv. (‡)—His manuscript memoir respecting the voyages of the Spaniards to the north west of America, II, 359.

Casts among the inhabitants of Mexico, I, 130.

Castillo (Bernal Dias del)—His judgment respecting the conduct of Cortez, II, 57 (*)

Castillo (Christophe de) a baptised Indian, author of a manuscript on the History of Mexico, II, 74 (*).

Cattle (Horned) in Mexico, III, 48—See also Zoology.

Catorce district of mines, II, 283; III, 120—Its description, III, 209.

Causeways leading to Mexico, II, 47—*Celaya*, Town, II, 207.

Cempoalla, chief place of the Totonacs, II, 263.

Ceralvo (Marquis de) Viceroy of Mexico, II, 114.

Cegars (Manufactory of) at Queretaro, III, 466.

Cerealia of the Old Continent unknown in America before the arrival of the Spaniards, II, 451—Region suitable to them, II, 453—Watering which they require, II, 457—Riches of the harvests, II, 461—Average produce of wheat, II, 462.—Amount of harvest in New Spain, II, 469—Comparison of the average produce with that of other countries, II, 475—Average price of wheat, II, 481—Quality of grain in New Spain, II, 482—Does not preserve long, II, 483.

Ceremony (Religious) celebrated at the time of the introduction of vaccination, I, 114.

Cerro de la Cruz, Mexican pyramid, II, 196.

Cervantes (Don Miguel) professor of Botany at Mexico, I, 215—His mineralogical collection *ibid*, II, 51 (*).

Cevallos (Don Ciriaco) explored the coast of New Santander, I, 83.

Chagre (River of) was proposed for the establishment of a communication between the two oceans, I, 29.

Chairs, quantity imported into Mexico in 1803, IV, 45.

Chalchiuhuecan, old denomination of the shore of Vera Cruz, II, 254.

Chaleo (Lake of) See *Xochimilco*.

Champoton river on the banks of which the Campeachy wood is cut down, II, 247.

Chanate, mountains, II, 285.

Chapala, Lake, I, 73.
Chapetones the name for the whites born in Europe, I, 204.
Chapoltepec—Aqueduct which conveys fresh water to Mexico, II, 45—Castle constructed by the viceroy Galvez, II, 102—His degradation, II, 103.
Chappe—His determination of the position of Mexico, I, xxviii, of Vera Cruz, I, xxxiv—His voyage to California, I, iii, 221.
Charcas, towns and mines, II, 282; III, 120.
Charles, I, *(fifth)*, encourages Cortez to discover the *secret of a strait* between America and Asia, II, 320.
Charles III. King of Spain.—Measures by which he ameliorated the condition of the Indians, I, 183.
Charles, IV. King of Spain, causes the benefit of vaccination to be communicated to the natives of America and Asia, I, 113—His statue at Mexico, I, 213, and II, 40.
Cheese, amount imported into Vera Cruz in 1802, IV, 35 in 1803, IV, 46.
Chiahuitzla, port, II, 263.
Chica, a mercury mine, III, 302.
Chicha, a spirituous liquor of the Mexicans, II, 447.
Chichimecs, a tribe of Indian savages, II, 205, 222, and 285—Their arrival in Mexico, I, 133.
Chila, a salt work of the Intendancy of Puebla, II, 199.
Chile—See Pimento.
Chili—Produce of its gold and silver mines, III, 352.
Chilpansingo, a town of the Intendancy of Mexico, II, 185.
Chimalapa, *(Rio de)* might serve for the establishment of a communication between the two seas, I, 23, IV, 22.
Chimalatl (Heliantus Annuus)—Its cultivation in Mexico, II, 506—See *Vegetables*.
Chimalpain—a baptized Indian, author of a manuscript on the History of Mexico, II, 74 (*)
Chinampas, floating gardens in the Lakes of Mexico, II, 97.
China—Quantity of gold and silver which flows into it from Europe, III, 442, IV, 340.

Chinese, cast so named in Mexico, I, 144.

Chladni (M.)—His memoirs on the meteoric iron of Mexico, III, 298 (*).

Choco (Province of)—Gold and silver produced in it, III, 382 to 392—State in which this province is, III, 386.

Cholula, a town of the Intendancy of Puebla—Its population, II, 198—Its manufactures, III, 461.

Cholula (Pyramid of)—Its dimensions, II, 193; compared with those of Egypt, with the monument of Belus, and the Teocallis of Teotihuacan, II, 194 (*)

Chonos (Archipelago of the) visited by the Indians of Chiloe, IV, 286.

Chota, mines, III, 344.

Chovell (M. de)—Information furnished by him to the author respecting the direction of the mountains of Mexico, I, lxxxviii—His labours respecting the mercury mines of this country, III, 300.

Chunu preparation of the potatoe, II, 496.

Churultecal, a name given to the town of Cholula by Cortez, II, 201.

Cibola, a fabulous town, II, 324.

Cicimecs, a wandering tribe to the north of Mexico, I, 12.

Cicuic, a town of Mexico, III, 298 (*).

Cider, amount imported into Vera Cruz in 1802, IV, 34.

Cieca (Pedro de) Leon—His account of the wealth of Potosi, III, 364.

Cienega de Arjonec } marshes in the environs of Vera Cruz,
Cienega Botacaria } IV, 156.

Cinnabar—See mercury.

Cinaloa, province, II, 297.

Cinaloa, town, II, 305.

Cinnamon, amount imported into Vera Cruz in 1802, IV, 35, in 1803, IV, 46.

Civilization—Progress which it has made among the whites of Mexico, I, 211.

Citlaltepetl, one of the highest summits of the Cordillera of

México, I, 62—Signification of this name, I, 61 (*)—See *Orizaba*.

Clavigero (Abbé) author of a History of Mexico, I, 211—His plan of the Lake of Tezcuco, II, 14.

Clayborne, a Fort of Louisiana, II, 277.

Clerc (M.) geographical engineer of Paris, I, cvii.

Clergy (Mexican)—Their number, I, 230—Their wealth, I, 231—Amount of capitals secured by them on landed property, III, 99.

Clerigo (Bridge of), place where the last Aztec King was taken, II, 76 and 77.

Climate of Mexico, I, 47, 60 *et seq*; II, 453 *et seq*; IV, 163.

Cloths, amount imported into Vera Cruz in 1804, IV, 364.

Cloth (Manufactures of) III, 462.

Coaches, manufactured in Mexico, III, 488.

Coadnabaced, name given by Cortez to the Town of Cuernavaca, II, 185 (†).

Coal—Places which furnish it, III, 320.

Cochineal—Its cultivation, II, 241; III, 62—See also *Zoology*.—Amount of its annual exportation from Vera Cruz, IV, 29—Amount of its exportation from Mexico in 1802, IV, 37; in 1803 for Spain, IV, 48; for other parts of Spanish America, IV, 49—Influence which the edict of free trade has had on its exportation, IV, 100.

Cock-fighting—Produce of the duty on, IV, 215 and 216.

Cock, name given by the Peruvians in derision to that bird, III, 54.

Cocoa—Its varieties, III, 23 (*)—Served for money in the time of the Aztecs, III, 25—Amount of its importation into Vera Cruz in 1802, IV, 36—Influence which the edict of free trade has had on its exportation, IV, 100.

Cocoa of Caracas—Quantity of it sent by Mexico to Europe, in 1803, IV, 48.

Cocoa of Guayaquil, carried to Europe through Mexico,

IV, 16—Amount of its annual importation into Vera Cruz, IV, 41—Amount of its exportation from Mexico, in 1802, IV, 38; in 1803 for Spain, IV, 48; for other parts of Spanish America, IV, 49.

Cocoa of Maracaybo—Quantity imported into Mexico, in 1803, IV, 47; exported, IV, 48.

Cocoa of Soconuzco—Amount exported from Mexico in 1802, IV, 37; in 1803, IV, 48.

Cocoa of Tabasco—Quantity imported into Mexico in 1803, IV, 47.

Cocoa-tree—Its cultivation in Mexico, III, 23—See also *plants and vegetables.*

Cocoyames—Savage Indians, II, 285.

Cod—Amount imported into Vera Cruz in 1802, IV, 35; in 1803, IV, 46.

Coffee—Amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47; of its exportation from Mexico in 1802, IV, 37; in 1803, IV, 47.

Coffee—Its cultivation in Mexico, III, 21—See also *vegetables.*

Cofre de Perote—Its geographical position, I, xliii—It is one of the high summits of the Cordillera of Mexico, I, 62—Description of that mountain, II, 257.

Cohahuila, province, II, 272—Name of its capital, II, 283.

Coinage (Duty on) paid by the proprietors of mines, III, 228.

Colima, volcano, II, 228-229.

Collnett (James) his voyage in the South Sea, I, xciii—He is arrested at Nootka by Don Estevan Jose Martinez, II, 374.

Colombia, river supposed to be identical with Tacoutche Tesse, I, 13—It was discovered by Quadra, II, 365.

Colon (Pedro Nuño) duke of Veraguas descendant of Christopher Columbus, II, 104, (†).

Colonies, principles on which they have been established by the moderns, III. 456.

Colonies (Spanish) effects which their independence would produce, IV, 244—See also *America (Spanish)*.

Colorado (Rio de) its junction with Gila, I, lix—It might serve to establish the communication between the two seas, I, 22.

Colpa, vitriolic earth—Its employment in amalgamation, III.

Comilhuitlapohuallixtli, religious calendar of the Mexicans, II. 261.

Commerce—How carried on between the Spaniards and certain Indian tribes, II, 3, 4—Restraints on the commerce of Mexico, III, 490—Interior commerce, III, 490—It is impeded by the want of water communication, III, 491—Roads by which it is carried on, III, 492—Objects of the commerce, IV, 12—Advantages which it would derive from the establishment of a communication between the two seas, IV, 17—Foreign commerce, IV, 27, at Vera Cruz, IV, 28—Objects of exportation, IV, 29; of importation, IV, 31—Amount of imports in 1802, IV, 33—36; in 1803, IV, 44-47; of exports in 1802, IV, 37; in 1803, IV, 48—Commerce of Acapulco, IV, 55—Duties to which commerce is subject, IV, 92—Contraband trade, IV, 94—Influence which the edict of free trade has had on commerce, IV, 99 *et seq.*—Loss in specie which New Spain annually suffers from her passive trade, IV, 107—Classification of the ports by which commerce is carried on with respect to their importance, IV, 118—General balance of the commerce of New Spain, IV, 122; of all Spanish America, IV, 127—Obstacles which the yellow fever throws in the way of commerce, IV, 132-203—See *yellow fever*.

Communication between the South Sea and Atlantic Ocean—Map which represents the points on which it may take place, I, cv—They are in number, 9, I, 18—*First point*,

between the river of Peace and the river Tacoutche Tesse, I, 19—*Second*, between the Rio del Norte and the Rio Colorado, I, 22—*Third*, between the Rio Huasacualco and the Rio de Chimalapa, I, 22; IV, 17—See *Huasacualco*—*Fourth*, between the Lake of Nicaragua and the gulf of Papagayo, I, 23—*Fifth*, at the Isthmus of Panama, I, 26—Physical effects which would be produced by this communication, I, 33—Political effects which it would have, I, 36—*Sixth point*, between the Bay of Cupica and the Rio Naipi, I, 39—*Seventh*, by the Ravin de la Raspadura, a communication which has existed since 1788, I, 40—*Eighth*, by the river of Guallaga, I, 40—*Ninth*, by the gulf of Saint Georges, I, 42.

Comoto (Don Florencio Perez y) director of the hospital of the Consulado at Vera Cruz, IV, 185.

Compohualilhuitl, civil calendar of the Mexicans, II, 261.

Compostella, town, II, 311.

Conchuco, produce of its mines, III, 346.

Conde (Don Diego Garcia)—His trigonometrical operation on a part of New Spain, I, lxxviii—He is entrusted with the construction of the road between Mexico and Vera Cruz, IV, 7.

Condorcanqui, a family which pretends to descend from the Incas, I, 200.

Condorcanqui (Andres) takes part in the revolt of his uncle Jose Gabriel, I, 201.

Condorcanqui (Diego), brother of Jose Gabriel—His cruelties, I, 202—The government orders his execution, notwithstanding he had been pardoned—*ibid.*

Condorcanqui (Jose Gabriel) pretended Inca of Peru, I, 200 - Insurrection excited by him, I, 201; IV, 262—His punishment, I, 202.

Conductors (Electrical) introduced in Mexico by the Count de la Cadena, III, 472.

Conil (*Boccas de*) sources of fresh water in the midst of Salt water, II, 205.

Conquer—Signification of this term in the missionary language, II, 297 (*).

Conquistadores, descendants of the first Spaniards settled in Mexico, I, 181.

Consulado of Mexico, finishes the Desague de Huehuetoca, II, 144.

Consulado of Vera Cruz, states of commerce published by it, IV, 33-43; in 1803, IV, 44-52—Its composition and functions, IV, 53.

Contraband (*Commerce*) of gold and silver; its principal emporiums, II, 390—That of the English with the Spanish colonies; its amount, IV, 94.

Convent of Saint Francis at Mexico, remarkable edifice, II, 49.

Convents—Why they have had less influence in America on the progress of agriculture, III, 102.

Cook (*James*) was not the first European navigator who entered the road of Nootka, II, 364.

Copala, mines, II, 230, 308.

Copper—Did the Mexicans know how to convert it into steel, III, 115—Mines which furnish it III, 236—*Copper of Coquimbo* sent to Europe through Mexico, IV, 16. *Copper in plates*—Amount exported from Mexico for Europe, in 1802, IV, 37; for other parts of Spanish America, in 1802, IV, 38; on account of the king, IV, 51.

Cordage, amount imported into Vera Cruz in 1802, IV, 34 and 36.

Cordillera of Mexico—Description of this chain, I, 50, of its highest summits, I, 62.

Cordoba, town, II, 269.

Cordwain, influence which the edict of free trade had on its exportation, IV, 100.

Corks, amount of, imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 45.

Coronado (*Sebastian*) discovers the mines of Catorce, II, 283; III, 210.

Corral (*Miguel de*) engineer—His plan of the Rio Huasacualco, I, lxxx—His researches respecting the establishment of a communication between the two seas, IV, 21.

Correa da Serra (*M.*) notes communicated by him, IV, 333 and 335.

Corrosegara (*Juan de*) inventor of a process of amalgamation, III, 267.

Cortez (*Hernan*) discovers the coast of California, I, li—How he names the capital of Mexico, I, 12—Title which he advises Charles V. to take, I, 13 (*)—Title which he had, I, 227—Advice which he gives to the emperor respecting the wealth of the clergy, I, 233—His testament, I, 239—His remorse, II, 243—How he is designated in New Spain, II, 7—His description of the valley of Mexico, II, 10—His sepulchral monument, II, 32—Account which he renders to Charles V. of the destruction of Tenochtitlan, II, 55—His activity induces him to make discoveries in the South Sea, II, 319 *et seq.* His voyage to California, II, 321—Description which he gives of the Popocatepetl, III, 473—Researches made by him respecting a communication between the two seas, IV, 18—His voyage in the Pacific Ocean, IV, 19.

Cosecheros, Indians who plant the vanilla, III, 34.

Costales—See *sacks*.

Costanzo (*Don Miguel*) determined the true latitudes of Cape San Lucas and Cape Saint Rosé, I. lii—The position of Santa Fe, I, lxiv—His maps of New Spain, I, lxxviii and lxxix—The journal of his voyage to California is confiscated, II, 327 (*)—His fate, II, 340.

Cosumel, island antiently inhabited by Europeans, II, 244.

Cotton—Its cultivation in Mexico, III, 18 *et seq.*—Amount

exported from Mexico in 1802, IV, 37; in 1803, IV, 49—Influence which the edict of free trade had on its exportation, IV, 100—Quantity sent annually to Europe from the different parts of the globe, IV, 388.

Cotton in grain—Quantity exported from Mexico in 1803, IV, 48.

Cotton stuffs, amount of their exportation in the Intendancy of Guadalaxara, III, 462—In the Intendancy of Puebla, *ibid.* Amount imported into Vera Cruz in 1802, IV, 34, 35; in 1803, IV, 46, 47.

Covens (Jean) how he fixed the position of Vera Cruz, I, xxxii; of Acapulco, I, xxxvii.

Coyotepec (Laguna de) eastern part of the Lake of Zumpango, II, *iii.*

Cramer (Augustin)—His plan of the Rio Huasacualco, I, lxxx—His researches respecting the communication between the two seas, IV, 21.

Creoles, whites born in the colonies, I, 204—Hatred which prevails between them and the Europeans, I, 205.

Crespi (Juan), companion of Juan Perez—His manuscript journal, II, 363 (*).

Criminals (condemned) employed in the manufactures, III, 464.

Croix (Marquis de), viceroy of Mexico, engages the body of merchants of Mexico to complete the Desague, II, 104.

Cruz del Rey, a dike which divides the Lake of Zumpango into two basins, II, 110.

Cruzada (Bulls of the)—Produce of this impost, IV, 214.

Cuba—The patriotic society of that island encourages the sciences, I. 211—Quantity of sugar exported by that island, III, 14—Supply which it draws annually from Mexico to support its expences of administration, IV, 234—Gross revenue of that island, IV, 236—Its armed force, IV, 267—Obstacles to the supplying the island

with provisions in time of war and proper measures for remedying them, IV, 286.

Cuepopan—See *Tlaquechiahacan.*

Cuernavaca, town of the Province of Xochitepec, near which the entrenchment of Xochicalco is situated, II, 69.

Cuernavaca, town of the Intendancy of Mexico, II, 184.

Cuervo (*Jose Tienda de*)—His map of Sonora, I, lxxxi.

Cues (*Llanos de los*), name of the valley where the pyramids of Teotihuacan are situated, II, 68.

Cuetlachtlan, antient denomination of the Intendancy of Vera Cruz, II, 250.

Cuitimba, a river which has disappeared. II, 216.

Cuitlahualzin, the last king of the Aztecs but one, II, 76.

Culiacan, town, II, 305.

Culiacan, river, II, 298.

Cumana—Annual balance of its commerce, IV, 121.

Cumanches, savage Indians. II, 235—Their address in managing horses, *ibid.*

Cumine—Amount imported into Vera Cruz in 1802, IV, 33.

Cupica (*Bay of*)—Project for establishing a communication between the two seas, I, 39.

Cuvier (*M.*)—His opinion respecting the nature of the axolotl, II, 17.

Cuyoacan, town of the Intendancy of Mexico, and convent founded by Cortez, II, 184.

D.

Davalos (*Don Rafael*) assisted the author in drawing the geological sections, I, cxix.

Davila (*Damian*)—Colleague of Henry Martinez at the Desague of Huehuetoca, II, 123.

Deaths—Their proportion to the births in Mexico, I, 102—To the population, I, 105—To the sexes, II, 250—Example of the tables of death which served the author in his computation of the population, IV, 97.

Defence of the country—General observations, IV, 48—Can have no other object but security from maritime invasion, IV, 268—War with the Indians, IV, 271—Defence of the eastern coast, IV, 73—See also *Force* (*armed*).

Delfware, manufactured in Mexico, III, 469—Amount imported at Vera Cruz in 1802, IV, 34, 35; in 1803, IV, 45—Amount exported in 1802 for other parts of Spanish America, IV, 38; in 1803, IV, 49.

Depositories (*metalliferous*) of Mexico, III, 134.

Derecho de oro y plata, revenue of the King of Spain from the produce of the mines, IV, 209.

Derecho de tierra caliente—Nature of this impost, IV, 27.

Desague de Huehuetoca—Manuscripts consulted by the author in his account of the Desague, II, 109 (*)—Commencement of the canal by Martinez, in 1607, II, 122—Defect with which he is reproached, II, 128—New surveys made by Alonzo de Arias, II, 130—Adrian Boot is entrusted with the inspection of the hydraulical operations, II, 131—Martinez resumes this undertaking, *ibid*—He causes an inundation, and is arrested, II, 133—Simon Mendez is charged with finishing the Desague, II, 134—Projects of Antonio Roman, Juan Alvarez de Toledo, Christobal de Padilla, and Francisco Calderon, II, 135 *et seq.*—Martinez is again entrusted with the undertaking, II, 139—His place is supplied by Father Luis Flores, II, 141—Martin Solis obtains the direction of the operations, II, 142—Mischief which he occasions, *ibid*—Slowness with which the labour is advanced, *ibid*—The body of Merchants of Mexico take charge of it,

II, 144—It is finished in 1789, II, 145—Judgment of the author respecting this work, II, 147—Dimensions of the Desague, II, 151—Survey of its waters, II, 163 (‡) This canal is one of the causes of the wretchedness of the Indians in the valley of Mexico, II, 168.

Diaz (Fray Juan)—His determination of the junction of the Colorado and the Gila, I, lix.

Dikes—Means employed by the Aztecs, to preserve the Town of Tenochtitlan from inundation, II, 117—This system was abandoned after the inundation of 1607, II, 205.

Dioscorea—See *Igname*.

Diputaciones de Mineria—Enumeration of the 37, into which the mines of Mexico are distributed, III, 119, 128.

Discoveries of the Spaniards on the north west coast of America, made by Cabrillo, II, 360; and IV, 81—By Gali, II, 360: and IV, 81—By Viscaino, II3, 61: and IV. 81—By Perez, II, 363—By Heceta, Ayali, and Quadra, II, 365—By Quadra and Arteaga, II, 366—By Martinez and Haro, II, 867—By the same Martinez, II, 369—By Elisa and Fidalgo, II, 374—By Malaspina, II, 375—By Galiano and Valdes, II, 380—By Caamano, II, 384—By Gaetano, IV, 82—By Mendana and Quiros, IV, 82—General view of the discoveries of the Spaniards in the great ocean, IV, 81 *et seq.*

Divisions of the territory of New Spain, I, 263-289—See *New Spain.*

Doctor (*El.*) mines of the Intendancy of Mexico II, 189.

Dogs serving for food, III, 47.

Dolores, Indian village—Tables of its births and deaths from 1750 to 1799, IV, 290.

Dominico, a species of Banana, II, 417.

Doz (*Vicente*)—His voyage to California, I, liii, I, 222.

Drake (*Sir Francis*), was not the first who discovered New California, II, 337.

Dupé (*M. de*)—His researches respecting the pyramid of Papantla, II, 259.

Durango, Bishopric—Its revenues, I, 231.

Durango, Intendancy—Its extent, II, 284—It is exposed to the incursions of the savage Indians, II, 285—Its towns, II, 291—Nomenclature of the Reales de minas which it contains, III, 123.

Durango, town—II, 291—Mass of malleable iron and nickel found in its environs, *ibid*—Period of its foundation, II, 308.

Durasno, a mercury mine, II, 301.

Duties (royal) paid on goods, IV. 92.

Duties, (*municipal*) paid on goods, IV, 93.

Duties on coin levied by the government, III, 329.

Dyeing of cotton at Tehuantepec, III, 462.

E.

Eatables, amount of, exported from Mexico for other parts of the Spanish colonies in 1802, IV, 38, in 1803, IV, 49.

Echeveria, painter at Mexico, I, 216.

Edgecombe, a mountain at first named San Jacinto, II, 365.

Elhuyar (Don Fausto de), director of the royal school of mines at Mexico.—His materials respecting the position of the mines of Mexico, I, ii, lxxxviii—His merits, I, 212—Communicated to the author specimens of a mass which appears to be aerolithe, II, 293—His project for a new gallery in the mine of Biscaina, IV, 219.

Elisa, (*Francisco*) his expedition to Nootka, II, 374.

Emparan, (*Don Vincente*) measure taken by him to ameliorate the climate of Porto Bello, IV, 154.

Ecomiendas, a species of fiefs established in favour of the Conquistadores, I, 181—They were annulled by king Charles III. I, 183.

Entradas, a species of warfare carried on by the missionaries against the Indios Bravos, I, 238.

Enumeration, (*first*) of the inhabitants of New Spain, I, 96—Details respecting this operation, IV, 291 *et seq.*

Equetchecan, Indian village, II, 249.

Escalante, (*Father*) his apostolical excursions towards the mountains de los Guacaros, II, 336.

Escalona, (*Duke of*) see *Villena*.

Esceien, a nation inhabiting New California, II, 345.

Escobar, (*Maria de*) spouse of Diego de Chaves, first introduced wheat into Peru, II. 452.

España, (*Josef*) merchant at Caracas—His project for rendering the province of Venezuela independent, IV, 265.

Espartal, marsh in the environs of Vera Cruz, IV1, 56.

Espinosa, (*Don Josef de*) his astronomical memoir, I, xci, xcii.

Estado, (*Casa del*) or house of the Duke de Monteleone, built on the site of the palace of Montezuma, II, 71.

Estola, (*Venta de*) its geographical position, I, xxxix.

Europeans, this word synonimous with Spaniards in Mexico, I, 210.

Expeditions, (*botanical*) undertaken by order of the government, I, 215—See *Mocino*, *Mutis*, *Ruez*, *Sesse*, *Pavon*.

Expences, (*public*) the amount from 1784 to 1789, IV, 224; in 1803, IV, 229—Classification of the expences; 1st. interior administration, IV, *ibid*; 2d *Situados*, IV, *ibid*; 3d *Liquido* remisible, IV, *ibid*.

Exportation of goods from the United States of America, in 1806, IV, 305.

Exportation of goods from Mexico—Its amount in 1802, IV, 37, *et seq*; in 1803, IV, 48, *et seq.*—Its annual amount, IV, 111—And in all the Spanish Colonies, IV, 127.

Extent of New Spain, I, 11, *et seq.*; II, 1.

E.

Fagoaga, a Mexican family distinguished for their wealth and patriotism, I, 225, 228.

Fagoaga, (*Don Joze Maria*) plan of the valley of Mexico, drawn up by him, I, xcix.

False-Orizaba, imaginary mountain indicated on the map of Arrowsmith, I, xlvi.

Famine, cause of the frequency of this scourge in Mexico, I, 119.

Faraones, see *Apaches*.

Ferrelo, (*Bartolome*) continues the voyage undertaken by Cabrillo, II, 464.

Ferrer, (*Don Joze Joacquin*) how he determined the position of Vera Cruz, I, xxxi—That of the Coffre de Perote, I, xliii—That of the Pic d'Orizaba, I, xliv.

Fever, (*yellow*) its principal seat is at Vera Cruz, IV, 132—Influence which the disease has on commerce, IV, 134; on the military defence of the country, IV, 134—Period when it was first observed, IV, 135—It ought not to be confounded with the *Matlazahuatl*, *ibid.*—It is identical with the *vomito prieto*, IV, 137—Why in former times it engaged very little the attention of physicians, IV, 138—Periods when this malady has been observed, IV, 140—It is endemical at Vera Cruz, IV, 141—It is a disease *sui generis*, IV, 144—It does not appear on the western coast of Mexico, IV, 144—It is not exclusively peculiar to the northern hemisphere, IV, 151—Connection of this disease with the temperature of the atmosphere, IV, 159—It is not essentially contagious, IV, 168—Under the tropics it does not attack the natives, IV, 170—The whites and mestizoes of the interior of the country are more subject to it than the Europeans who come by sea, IV, 174—Men are more subject to this disease than women, IV, 179—Duration of the disease, IV, 179—Average mortality among the patients, IV, 180—Limits of the disease towards the interior of the country, IV, 186—

Treatment of this disease by the stimulant method, IV, 187; by quinquina, IV, 189; by frictions of oil of olives, IV, 548; by ice and snow, IV, 191—The disease only appears periodically, IV, 192—Means of rendering it less frequent, IV, 199.

Feyjoo, errors committed by him in estimating the population of Peru, I, 92.

Fidalgo, (*Don Salvador*) his expedition to the north of America, II, 374.

Fifth, paid to the king at Potosi, III, 356, *et seq.*

Figs, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Finances of Mexico, see the articles *public expences and revenues.*

Finances of the Spanish monarchy—Amount of the whole receipts in 1804, IV, 240.

Flax, the government prevents its cultivation in Mexico, II, 517, III, 20.

Florez, (*Antonio*) companion of Viscaino, II, 361.

Florida Blanca, (*Count*) established posts throughout all Spanish America, I, 7.

Florida, sum which it draws annually from Mexico to support the expence of its administration, IV, 235.

Flour, amount of annual exportation from Vera Cruz, IV, 30; for other parts of Spanish America in 1802, IV, 38; in 1803, IV, 49—Quantity sent to the Havanah in 1804 and 1805, IV, 265.

Font, (*Fray Pedro*) his determination of the junction of the Colorado and the Gila, I, lix—His journey by land, from La Pimeria Alta, to Monterey, II, 300.

Fonte, (*Bartolome*) his apocryphal voyage to the north west of America, II, 359.

Fonte, (*Pedro de*) his map of California, I, lxxxi.

Forcada, (*Antonio*) his map of New Spain, I, lxxviii.

Force, (*armed*) in New Spain—Amount of expence which it causes to government, IV, 230—Proportion between

that expence and the revenue, IV, 247—Amount of armed force in 1804, IV, 248—Table of the distribution of the troops of the line, IV, 249 *et seq.*; of the militia, IV, 252—Number of disciplined troops, IV, 256—Fatigues to which those of the presidios are subjected, IV, 257.

Fresnillo, town, II, 234.

Fruits, (preserved) amount imported into Mexico in 1803, IV, 44.

Fuca, (Juan de) his pretended voyage to the north west coast of America, II, 359 and 380.

Fuerte, town, II, 304.

Furniture, manufactured in Mexico, III, 488.

Furs, amount of, exported from Mexico in 1802, IV, 37; in 1803, IV, 48.

G.

Gachupines, a name given to the whites born in Europe, I, 130, 204.

Gali, (Francisco) discovers part of the north west coast of America, II, 360.

Galiano, (Don Dionisio) how he fixed the position of Mexico, I, xxv—His expedition to New California, II, 342; to Nootka, II, 386.

Gallatin, (M.) treasurer of the United States—Extracts made by him from the custom-house books, IV, 304—His note on the extent and population of the United States before the acquisition of Louisiana, IV, 324.

Galleon of Manilla, commercial relations which it establishes between America and Asia, IV, 71.

Galvez, (Bernardo, Count de) viceroy of Mexico, suspected of wishing to render himself independent of Spain, II, 103.

Galvez, (Joze, Count de) minister of the Indies—His

journey to Sonora, II, 320; his voyage to California, II, 325.

Gama, (Antonio de Leon y) how he fixed the longitude of Mexico, I, xxiii—Biographical account of this learned man, I, 222.

Gamio, (Juan Ignacio) proprietor of a German amalgamation work in Peru, III, 351 (*)

Gante, (Fray Pedro de) a Franciscan monk, believed to have been a natural son of Charles the fifth, communicates the knowledge of the mechanical arts of Europe to the Indians, II, 50.

Garces, (Francisco) his map of California, I, lxxxi; his voyage, II, 300.

Garces, (Henrique) the invention of the amalgamation used in America falsely attributed to him, III, 254.

Garces y Equia, (Don Josef) his work on the Tequesquite, II, 233.

Garcia, (Don Pedro) his operations on the Cinnabar veins of Guazun, III, 308.

Garden, (botanical) at Mexico, I, 215, II, 51.

Gardens, (floating) see *Chinampas.*

Garnier, (M. Germain) his estimate of the produce of the gold and silver mines of Spanish America, III, 408.

Gastelbondo, (Juan Josef de) a physician observed the yellow fever in 1729, IV, 141.

Gauze, amount imported from Spain into Vera Cruz, in 1802, IV, 34.

Gay-Lussac, (M.) his experiments on the amalgamation of the muriate of silver, III, 275.

Gerboux, (M. Fr.) his estimate of the quantity of gold and silver which since 1492 has flowed into Europe, III, 410.

Giganta, a mountain of California, II, 327.

Gigante, a mercury mine, III, 303.

Gijon, (Count de) his attempt to establish colonies of artizans from Europe in the province of Quito, III, 458.

Gila, (Rio) its junction with the Rio Colorado—See *Colorado*—The Aztecs made their second station on the banks of this river, II, 303.

Gilbert, (M.) his statistical information respecting Yucatan, II, 243.

Ginetta, mountain, II, 236.

Gmelin, (M. Fr.) a celebrated artist at Rome, author of the drawing of the view of the Volcano de la Puebla, which is part of the Mexican atlas, I, cxxiii.

Goats, (wild) of the mountains of New California, II, 327.

Gold, veins which contain it, III, 147—The finest of America is that of Giron in New Grenada, III, 384—See respecting the working of the gold mines, the quantity obtained of this metal, and what is annually exported, the article *mines.*

Gold in leaf—Amount exported from Vera Cruz in 1802, IV, 37; in 1803, IV, 48.

Gold in ingots, exported from Vera Cruz, IV, 39.

Gold coined and wrought—Amount exported from Mexico on account of individuals for Europe in 1802, IV, 37; in 1803, IV, 48; for other parts of Spanish America in 1802, IV, 38; in 1803, IV, 49—Quantity absorbed by the commerce with India, IV, 339.

Gold wrought by the Mexicans in the time of Montezuma, III, 110 *et seq.*;—Its present state, III, 477—Its amount in all Europe, IV, 344.

Goods, (colonial) wealth of Mexico in this respect, III, 1.

Grain of Europe—See the words *cerealia, plants, vegetables.*

Grapes, (dried) amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Guimarest, (Don Pedro) commandant general of the *provincias internas*, II, 278.

Grixalva, (*Hernando de*) discovers the island of Socorro and California, I, xcii; II, 321; IV, 19.

Grixalva, (*Juan de*) visits the island of Ulua in 1518, II, 262.

Guacaros, (*los*) mountains, II, 336.

Guachichiles, tribe of Indians, II, 205.

Guachinangos, a name by which the inhabitants of the city of Mexico without habitations are designated, I, 235—See *Sarragates*.

Guadalaxara, (*Don Diego*) Professor of mathematics at Mexico, author of a Table of Latitudes, I, lxvi, 220.

Guadalaxara, bishoprick—Its revenues, I, 231.

Guadalaxara, intendancy, II, 227—Its extent, *ibid*—Its climate, II, 228—Its agriculture, II, 229—Its mines, II, 230—Its towns, *ibid*—Its *Reales de minas*, III, 122—Its manufactures, III, 460.

Guadalaxara, town, II, 230—Its manufactures, III, 460, *et seq*.

Guadalupe, river—See *Tepeyaca*.

Guadiana—See *Durango*, town.

Gualcayoc, mines, III, 343—Their produce, III, 346.

Guallaga, a river which may serve for the establishment of a commercial communication between the two seas, I, 41.

Guamachuco, produce of its mines, III, 346.

Guamanes, a tribe of Indians, II, 205.

Guanaxuato, intendancy—Number of ecclesiastics contained in it, I, 230 (*)—Its extent II, 204—Its population, II, 206—Its agriculture, II, 204—Its mines, II, 205—III, 119—Its towns, II, 205—Its mineral waters, II, 207—Minute description of its mines, III, 169, *et seq*.—Revenues of the intendancy, IV, 237.

Guanaxuato, town—Its geographical position, I, xlviii—Its population, II, 206—See also *Zacatecas*.

Guarisamey, mines, II, 295.

Guasacualco, river, I, 72.

Guatimucin—See *Quauhtemotzin.*
Guautitlan, river, II, 108.
Guaxaca—See *Oaxaca.*
Guayaquil—Annual balance of its commerce, IV, 120.
Guayhuepes, Indians who periodically visit the Huaytecas and Chonos Islands, IV, 286.
Guaymas, port, II, 298.
Guayra, annual balance of its commerce, IV, 120.
Guayras—See *Huayres.*
Guelves, (*Marquis de*) viceroy of Mexico, orders the canal of Nochistongo to be stopt up, II, 131.
Guerra, (*Garcia*) archbishop of Mexico, viceroy of New Spain, entrusts the work of the Desague to Alonzo de Arias, II, 130.
Guichichila, mines, II, 230.
Guignes, (*M. de*) his researches respecting the quantity of silver carried by the English to China, III, 446.
Guines, (*Canal de los*) projected in the Island of Cuba, I, 44; IV, 287.
Guitivis, port, II, 298.
Gulph stream, current of warm water, I, 33.
Gutteriez, a baptized Indian, author of a manuscript on the history of Mexico, II, 74 (*).

H.

Habilitadores, capitalists who carry on the commerce of Vanilla and Quinquina, III, 24.
Haenke, (*M. Thadée*) botanist of the expedition of Malespina, II, 277.
Hammocks, amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.
Hams, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.
Haro, (*Gonzalo Lopez de*) his expedition to the Russian establishments in America, II, 367.

Harpoons, amount imported in Vera Cruz in 1802, IV, 36.

Harpsichords, manufactured in Mexico, III, 488.

Hatun-Potocsi, or *Cerro de Potosi*—See *Potosi*.

Havanah, (Capitaneria Generale) balance of its commerce IV, 127—Its gross revenues, IV, 241.

Havanah, port, annual balance of its commerce, IV, 118—This port ought to be regarded as the military post of Mexico, IV, 273.

Heceta, (Bruno) his voyage to the north west coast of America, II, 365.

Heceta, first name of the Rio Columbia, II, 365.

Heights, measured in the interior of New Spain, I, cxliii *et seq.*; IV, 354.

Hell, (Father) how he fixed the position of San Jose, I, liii.

Hemp, the government does not encourage its cultivation in Mexico, II, 517, and III, 20.

Hens, unknown in Mexico at the period of the conquest, III, 51.

Herrera, (Don Josef)—See *Cevallos*.

Hides of buffaloes, influence which the edict of free trade has had on their exportation, IV, 100.

Hides, (raw) amount exported from Mexico in 1802, IV, 38; in 1803, IV, 49—Influence which the freedom of commerce has had on this exportation, IV, 100.

Hides, (tanned) manufactures of, in the intendancy of Guadalaxara, III, 461. Amount exported from Mexico in 1802, IV, 38—Influence which the edict of free trade has had on their exportation, IV, 100.

Himmelsfürst, mine of Saxony compared with that of Valenciana, III, 202.

Hog, animal unknown in Mexico at the period of the conquest, III, 51.

Horns of oxen, influence which the edict of free trade has had on the exportation, IV, 100.

Horses, their propagation in the Savanahs, IV, 257.
Hospital of Mexico, II, 50.
Hostimuri, town, II, 305.
Hostotipaquillo, mines, II, 230.
Huajocingo, or *Huexotcinco*, town, II, 203; III, 461.
Hualca, (Diego) discovered the metalliferous depository of Potosi, III, 171.
Huancavelica, mercury mines in Peru, III, 309.
Huantajaha, produce of its mines, III, 347.
Huari Capca, discovered the mines of Pasco, III, 341.
Huasacualco, river which might serve to establish the communication between the two seas, I, 22—Its importance in this respect was perceived by Cortez, IV, 17.
Huaxyacac, one of the principal places of the country of the Zapotecs, II, 235.
Huayna-Potocsi, a mountain near Potosi, III, 376.
Huayres, furnaces antiently used in the Cerro de Potosi for the extraction of silver from ores, III, 376.
Huaytecas, archipelago visited by the Indians of Chiloe, IV, 286.
Huehuetoca, (Desague de)—See *Desague*.
Huehue-Moteuczoma, the name of *Montezuma* I, II, 9 (‡)—Dike which he orders to be constructed, II, 117.
Huehuetlapallan, unknown country, originally inhabited by the Toltecs, I, 36.
Hueilcohuacan, town, II, 305.
Huexotcinco, see *Huajocingo*.
Hugarte, (*De Lere Juan*) discovered the errors of the maps of California, I, lxi.
Huichilobos, see *Huitzilopochtli*.
Huitzilopochco, springs brought into the canals of Tenochtitlan, II, 31—Danger to which that aqueduct exposes the city, II, 119.
Huitzilopochtli, Mexican divinity—Where his temple was situated, II, 9—Signification of this name, II, 17 (†).
Huitzitzila, see *Tzintzontzan*.

I.

Igname, its cultivation in Mexico, II, 500; IV, 336. See *vegetables*.

Isles of the Great Ocean discovered by the Spaniards, IV, 82.

Importation of European goods into Mexico—Its amount in 1802, IV, 33, *et seq.*; in 1803, IV, 46; in 1804, IV, 363; in 1805, IV, 366, and in 1806, IV, 366—Its annual amount, IV, 111, and IV, 281; and in all the Spanish colonies, IV, 127—Amount of fraudulent importation, IV, 131 *et seq.*

Imposts paid by the proprietors of mines, III, 328.

Indies, (*East*) quantity of gold and silver which flows there from Europe, III, 442; IV, 339.

Indians, (*copper coloured Americans*)—Their number, I, 131—Their migrations from north to south, I, 197—Their languages, I, 138—Their physiognomy, I, 380—Their complexion, I, 143—They have a beard, I, 147—Their longevity, I, 148—Drunkenness, I, 149—Are not subject to deformities, I, 152—Their resemblance to the Mogul race, I, 153—Their moral faculties, I, 155—Their state of civilization before the arrival of the Europeans, I, 158—Comparison between them and the Negroes, I, 162—Their religion, I, 164—Their character, I, 164—Their melancholy, I, 171—Their taste for painting and sculpture, I, 172; for flowers, I, 173, 174—Their social state, I, 179—Oppressions they experienced at the time of the conquest, I, 180—They were subjected to the encomiendas, I, 181—Their condition has been ameliorated in the 18th century, I, 183; especially by the establishment of intendancies, *ibid.*—Inequality of fortune among them, I, 184—Wretchedness of the great mass,

I, 185—Examples of great wealth, I, 186—They pay no indirect imposts, *ibid*—They are subject to tribute, I, 187—Of the impost paid by them, *ibid*—They are deprived of several civil rights, I, 188—Degradation in which they are at present, I, 190—Why the late viceroys have not been able to do any thing in their favour, I, 198—Political inconveniences resulting from the insulated state in which the Indians are kept, I, 200.

Indians, (wandering) see *Indios Bravos.*

Indigence of the Mexican people—Its causes, I, 185: IV, 112.

Indigo, of its cultivation, III, 44—Carriage from Guatimala through Mexico for Europe, IV, 17—Amount of its annual exportation from Vera Cruz, IV, 30; of its importation in 1802, *IV, 36*; of its exportation from Mexico in 1802, IV, 37; in 1803, IV, 48; in 1804, IV, 363—Influence which the edict of free trade has had on this exportation, IV, 100.

Indios Bravos, I, 175—War carried on against them by the missionaries and the troops of the presidios, I, 237, IV.

Iniesta, (Yldefonso) his estimate of the quantity of water contained in the canal of Huehuetoca, at the great swells, II, 149 (†).

Iñena, (Blas de) manner in which he entered the Crater of the Cerro de Masaya, III, 310.

Inoculation of the small pox; its progress in Mexico, I, 112.

Inundations in the valley of Mexico, II, 111—Period observed by them, II, 113—Inundation of 1446, II, 117; of 1498, II, 118; of 1553, II, 120; of 1580, *ibid;* of 1604, *ibid;* of 1607, *ibid;* of from 1629 to 1634, II, 133; of 1763, II, 160; of 1772, II, 161.

Intendancies, their number, I, 266—Disproportion in their extent, I, 282; in their population, I, 284; in their relative population, I, 285.

Iraca, a Mexican dish, II, 510.

Iron, its use unknown to the antient Mexicans, or at least not rightly appreciated by them, III, 114, *et seq.*—mines which furnish it, III, 296—Amount of its annual importation into Vera Cruz, IV, 31.

Iron in bars, amount of its importation into Vera Cruz in 1802, IV, 34; in 1303, IV, 45, 46; in 1804, IV, 363.

Iron, (*white*) amount imported into Vera Cruz, in 1802, IV, 34, 35; in 1803, IV, 46.

Iron manufactured, amount imported into Vera Cruz, in 1802, IV, 34; in 1803, IV, 45—On account of the king, IV, 51.

Iron, *meteoric* found in Mexico, III, 298.

Isasvirivill, *(Don Mariano)* how he determined the position of Vera Cruz, I, xxxii: that of the Pic d'Orizaba, I, xliv.

Isleños, natives of the Canary Islands, I, 204.

Istenenetl, remains of a small Mexican pyramid, II, 196—See *Alcosac*.

Istla, *(bridge of)* its geographical position, I, xxxix.

Isthmus of Panama, height of its mountains, IV, 350.

Iturigarray, *(Don Josef de)* viceroy of Mexico—See *Yturigarray*.

Itzli, see *Obsidian*.

Ixtlilxochitl *(Antonio Pimentel*, *Fernando Pimentel*, and *Fernando Alba)* baptised Indians authors of manuscripts on the history of Mexico, II, 74 (*).

Iztaccihuatl, one of the highest summits of the Cordillera of Mexico, I, 62 and IV, 355—Signification of the word, I, 61 (*).

J.

Jalap, province which produces it, II, 269—Its cultivation, III, 28—Amount annually exported from Vera Cruz,

IV, 30; in 1802, IV, 37; in 1803, IV, 48; in 1804, IV, 363.

Jamaica—Quantity of sugar which it exports, III, 14.

Jatropha or *Juca*—See *Manioc.*

Jefferson (*Mr. Thomas*)—His determination of the position of Santa Fe, I, lxiii—Eulogy of that statesman, I, 15; II, 337 (*).

Jefferys (*Mr. Thomas*)—His determination of the position of Mexico, I, xxv; of Vera Cruz, II, xxxiii.

Jesuits—Their settlements in California, II, 324—Opposition which they have to encounter, II, 331—The military is under their orders, *ibid.*

Jorullo (Xorullo) volcano; its origin, II, 211.

Juca, a plant which yields the manioc, II, 430—See *Manioc.*

Juncos, tribes of Indians, IV, 286.

Juruyo—See *Jorullo.*

Justice—Expence which its administration costs the state, IV, 230 *et seq.*

K.

Kenayzi, a people of Russian America, II, 393.

Kino (Father)—See *Kühn.*

Klaproth (M.) analysed the aerolithe of Durango, II, 293; and the muriates of silver, III, 152.

Koliugi, a people of Russian America, II, 394.

Koniagi, a people of Russian America, II, 392.

Kühn (Father Eusebius)—His voyage to California, I, lviii—Unjust to attribute to him to have first proved that that country is not an island, II, 319, 323, 331.

L.

Laborde (*Jos. de*) founder of the church at Tasco, II, 186—His adventures, IV, 224 *et seq.*

Laborde (Alex. de), II, 89 (*).

Labour (Price of) in Mexico compared with that of other countries, II, 480.

Lachaussée (M.) constructed a machine *à colonne d'eau*, according to the plan of M. del Rio, III, 222.

Lafora (Don Nicolas)—His itinerary, I, lx—His map of the frontiers of New Spain, I, lxxxiii.

Lagos, town of the Intendancy of Guadalaxara, II, 231—Its manufactures, III, 460.

Laguna (Don Pedro de la)—His map of a part of Mexico, I, lxxix—Orders plans to be drawn of the ruins of Mitla, II, 238, 239.

Lagunas of the Province of Texas, II, 275.

Landivar (Don Raphael) a Mexican poet, II, 211.

Language of the natives, I, 138.

Lapeyrouse—How he determined the position of Monterey, I, lvii.

La Salle (De)—His settlement to the west of the Mississippi, gives rise to discussions respecting the limits of Mexico, II, 276; IV, 270.

Lauricocha, mines, III, 343.

Laxas (las), river, I, 73.

Lead—Mines which furnish it, III, 298—Amount exported from Mexico in 1802, IV, 38; in 1803, IV, 49.

Leca (Carlos Corso de) inventor of the *beneficio de hierro*, III, 266.

Le Maur (Don Francisco) draws the plan of the canal de los Guines, I, 44.

Lemos (Don Francisco Gil), viceroy of Peru, ordered the southern coast of Chili to be examined, I, 42—His enumeration of the inhabitants of Peru, I, 92.

Leoba—See *Mitla*.

Leon, town, II, 207.

Lerma, river, I, 73; II, 205.

Levels or *canals of evacuation*, succeeded from 1607 the

system of dikes for preserving Mexico from inundations, II, 123.

Lewis—His voyage to the mouth of the Rio Colombia, II, 337.

Lighthouse of Vera Cruz, IV, 53.

Lima—Annual amount of the quantity of gold and silver coined in that city, III, 337—Annual balance of its commerce, IV, 119.

Lipans, savage Indians, I, 175.

Liquors (fine)—Amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 45.

Liquido remisible, net revenue drawn by the king of Spain from Mexico, IV, 236; and from the other colonies, IV, 238.

Lizana (Don Francisco Xavier de) archbishop of Mexico—Information furnished by him to the author, I, 100 (*).

Llanas (*Antonio*) discovered the mines of Catorce, III, 210.

Loaysa (*Fray Geronimo*) archbishop of Lima, makes an enumeration of the inhabitants of Peru, I, 92.

Lopez—His plan of the environs of Mexico, I, lxxviii.

Lorenzana (*Cardinal de*) archbishop of Mexico—His work on the antiquities of Mexico, I, 233—Memoir drawn up by him relative to the Desague, II, 109 (*).

Loreto, principal place of California, II, 333.

Louisiana, assistance which it drew annually from Mexico for expences of administration, IV, 235.

Love-apple—See *Tomatl.*

M.

Macuina, chief or tays of Nootka, II, 374, 378.

Maculepec, basaltic mountain, II, 268.

Maenza (*Marquis de*)—His attempt to establish a colony of European artizans in the kingdom of Quito, III, 458.

Maguey (*Agave*)—Its cultivation in Mexico, II, 519—Liquor extracted from it under the name of Pulque, II, 521—Importance of this cultivation, II, 526—See *plants, pulque, vegetables.*

Maize—Its cultivation, II, 439 *et seq.*—Its extraordinary fecundity, II, 442—It constitutes the principal nourishment of the people, II, 444—Its average price, II, 445—Liquor made from it, II, 447—Amount of its produce, II, 449.

Malaspina (*Alexander*)—How he fixed the position of Cape San Lucas, I, lv; and Monterey, I, lvi—His expedition to the north west coast of America, II, 317.

Maldonado (*Ferrer*)—His apocryphal voyage to the north west coast of America, II, 359.

Malouin Islands—They contain no stable settlements, IV, 285.

Malpasso, IV, 21—See *Passo.*

Malpays, a canton formed by a volcanic eruption, II, 213.

Malte Brun (*M.*)—Doubts excited by him respecting the identity of the Tacoutche Tesse and the Rio Colombia, I, 21.

Manganese, mines which furnish it, III, 299.

Mangi (*Juan Mateo*)—His manuscript journal of a voyage to California, II, 334 (*).

Mani—Its cultivation in Mexico, II, 545.

Maniau (*Don Joacquin*)—His manuscript work on New Spain, I, 187 (‡).

Manioc—Its cultivation, II, 430—Its species, II, 431—It is indigenous in America, II, 433—Utility of this production, II, 435.

Mansos, mountains, II, 403.

Manufactures—Obstacles which the government throws in their way, III, 458—Amount of the value of their produce in New Spain, III, 460—Manufactures of cotton, III, 461; of cloth, III, 463; of silk, III, 465; of tobacco,

III, 466; of soap, III, 467; of stone ware, III, 469; of gon powder, III, 470; of wrought gold, III, 477—Coin, III, 479.

Manuscripts on California existing in Mexico, II, 334 (*).

Manzo (Francisco) y Zuniga, archbishop of Mexico—His liberality during the inundation between 1629 and 1634, II, 137.

Map of the points of separation and communications projected between the two seas—Description of this map, I, cv, 43—Materials that served for it, IV, 344.

Map of New Spain and the conterminous countries to the north and east—Object of this map and materials on which it was drawn up, I, xc.

Map of the valley of Mexico—Materials for it, I, xciv—Astronomical observations on which it is founded, IV, 344.

Map (reduced) of the kingdom of New Spain—Materials which served for this map, I, ii—Why the author followed the projection of Mercator, I, xvi—Scale employed, I, xvii—Bounds of this map, *ibid.*—Why the scale of centesimal degrees was not added to it, I, xviii—Principles followed in the denomination of the seas, I, xx—Thirty-three points determined by the observations of the author, I, *ibid*—Discussion of the position of Mexico, I, xxi—(See *Mexico city*); of that of Vera Cruz, I, xxxi; of that of Acapulco, I, xxxiv; of different places on the road from Mexico to Acapulco, I, xxxviii; of that from Mexico to Vera Cruz, I, xii; of different points situated between Mexico, Guanaxuato, and Valladolid, I, xlviii; of California, I, l—Manuscript materials consulted by the author, I, lxii—Maps of which he availed himself, I, lxxi—Advantages which his maps possess over those of an older date, I, lxxxiii—Manner in which he has traced the mountains, I, lxxxv.

Maps (geographical), made by the Aztecs, IV, 17.

Maps (Physical), or sections of Mexico—Description of

these sections; 1st of the eastern declivity of the table land of Anahuac, I, cvii; 2nd of the western declivity of the table land of New Spain, I, cxvi; 3rd of the central table land of New Spain, I, cxix—See also, I, 51 *et seq.*

Mapimi—See *Bolson*.

Mapimis, town, II, 204.

Marfil, mines, II, 206.

Marquez (*Pietro*)—His work on Mexican antiquities, II, 261.

Marquis (*Port of the*), part of the port of Acapulco, IV, 59.

Marquis (*The*), name by which Cortez is known in Mexico, II, 7 (†).

Martin (*Don Luis*), a Mexican engineer, I. xcix, cxxiii—Extent which he gives to the valley of Mexico, II, 5—His work on the ruins of the palace of Mitla, II, 238.

Martinez (*Alonzo*) colleague of Enrico Martinez, II, 123.

Martinez (*Enrico*) author of the Desague of Huehuetoca, II, 122—Beginning of his work, II, 125—Reproaches made to him, II, 128—He drew up the maps of the voyage of Viscaino, II, 361.

Martinez (*Don Estevan Jose*) pilot of Juan Perez, in his voyage to the north west coast of America, II, 363, 367—He is charged with the establishing a settlement at Nootka, II, 369—Orders James Collnett to be arrested, II, 374.

Mascaro (*Don Manuel*)—His manuscript voyage, I, lxii—His map of New Spain, I, lxxiv; of the environs of El Doctor, &c. I, lxxviii.

Maso (*Don Jose del*) proprietor of a mercury mine, III, 303.

Matalans, a nation of New California, II, 345.

Matches, quantity imported into Mexico in 1803, IV, 47.

Matlazahuatl, a disease peculiar to the Indians, I, 117, IV, 136.

Maurello (Don Francisco) a pilot, author of the journal of the voyage of Heceta, Ayala, and Quadra, II, 365.

Maya, language of the Indians of Yucatan, II, 246.

Mayo, river, II, 297.

Mayolas, a tribe of Indians, II, 205.

Mayorazgo—Introduction of into Mexico hostile to the progress of agriculture, III, 102.

Meat. (Salted)—Amount annually exported from Vera Cruz, IV, 30.

Mechoacan, a medical root, III, 39.

Mechoacan, an antient kingdom independent of the Mexican empire, II, 208—See also *Valladolid.*

Mecos, savage Indians, I, 175—War carried on against them by the missionaries, I, 237, II, 285.

Medford (M. Macall)—His researches respecting the exports of the United States, IV, 317.

Medina (Bartholomé de) inventor of the amalgamation used in the mines of the New World, III, 254.

Medina (Salvador de)—His voyage to California, II, 222.

Meganos, moving sand hills in the environs of Vera Cruz, IV, 154.

Meiya, a species of Banana, II, 417.

Mendez (Simon)—His project to prevent inundations, II, 134—Was again examined in 1774 by Velasquez, II, 167.

Menquis, a people of California, II, 332.

Mercury—Quantity of this metal employed in extracting the silver from the minerals of Mexico, III, 281; IV, 356—Inconvenience from the commerce in this metal not being free, III, 284—Influence of its price in mining, III, 285—Attempt to procure it from China, III, 286—Mines which furnish it, III, 301—Importation of this metal into America will soon cease, III, 304—Place

of Spanish America out of Mexico where it is to be found, II, 306—Quantity sent to Potosi, III, 378—Amount annually imported into Vera Cruz, IV, 31—Amount imported into Mexico in 1802, IV, 41; in 1803, IV, 51; in 1804, IV, 365—Amount of revenue which its sale produces to the king, IV, 209—Table of the consumption of this metal in the districts of mines, IV, 356.

Merida, intendancy—Its extent, II, 243—Its climate, II, 245—Indians who inhabit it, II, 246—Its productions, II, 247.

Merida de Yucatan, town, II, 248.

Mermentas, river, II, 277.

Mesada y media anata—Annual produce which the exercise of this right brings into the king, IV, 214.

Mescala, village—Its geographical position, I, xxxviii.

Mescaleros—See *Apaches*.

Mestizoes, I, 130—Their number, II, 243.

Metates (los) mountains, II, 295.

Metals employed as money by the Aztecs; gold dust, copper, tin, III, 116.

Metals (precious)—See the articles, *silver*, *gold*, *mines*, *Philippines*.

Mexicans—See *Aztecs*.

Mexical, a spirituous liquor from Pulque, II, 527.

Mexicana, river, II, 277.

Mexico—Archbishoprick—Its revenues, I, 231; II, 84.

Mexico, intendancy—Its extent and population, II, 3—Its limits, II, 3—Nature of the country, II, 4—Description of the valley of Mexico, II, 5—See *valley of Mexico*—Its principal towns, II, 183—Its mines, II, 189; III, 121.

Mexico, country—Signification of this word, I, 12.

Mexico, kingdom—Its population, II, 1—See also *New Spain*.

Mexico, valley—Its situation, II, 5—Its extent, II, 6—Roads which run through it, II, 7—Description which

Cortez made of it, II, 10—Plan which he drew up of it, II, 13—Successive settlements made there by the Aztecs, II, 16—Description of the Teocalli of Tenochtitlan, II, 19—See this word—Description of the town of Mexico, II, 2 —See *Mexico*—Antique monuments found in the valley of Mexico, II, 61—Pyramids of San Juan de Teotihuacan, II, 63—Military entrenchment of Xochicalco, II, 69—Places remarkable in a historical point of view, II, 70—Chinampas floating on the lakes, II, 96—Hot springs, II, 101—Castle of Chapoltepec, II, 102—Afluents of that valley, II, 107—Desague of Huehuetoca, II, 111—See this word—Project for draining the valley, II, 134—Causes of the depopulation of this valley, II, 169.

Mexico, town—Its geographical position, I, xxi—The longitude which the author assigns to it, differs a degree and a half from that which has hitherto been adopted, I, xviii—Consternation which the eclipse of the sun in 1803 occasioned in Mexico, I, xxx—Latitude, *ibid*—Distance of that town from Acapulco, I, xl—Antient names of Mexico, I, 12—Advantages of its situation for communications with the rest of the world, I, 79—Proportion of the casts which constitute the population, II, 209; 256—Scientific establishments contained in this city, I, 212—Number of saragates or inhabitants without any domicile, I, 235—Proportion of the sexes in its population, I, 252—This city is no longer situated in the midst of water, II, 9—Dikes by which it communicated with the continent, II, 25—Mexico, as rebuilt by Cortez is smaller than Tenochtitlan, II, 27—Why it is at a distance from the lakes, II, 29—Beauty of the town and its environs, II, 38—Cleanliness which prevails there, II, 44—Aqueducts for the conveyance of fresh water, II, 45—Causeways leading to it, II, 47—Remarkable edifices, II, 49—Antique monuments, II, 52—Description of the palace of Montezuma, II, 70—Ruins of that of

king Axajacatl, II, 72—Bridge called Salta de Alvarado, II, 73—Bridge of the Clerigo, II, 76—Did Cortez do right to rebuild the city in the place where Tenochtitlan was situated? II, 78—Its population, II, 81, 183, IV, 291—Number of the ecclesiastics, I, 230 (*), II, 83—Revenues of the archbishoprick, I, 271; II, 84—Its tribunal of inquisition, I, 84—Births and deaths, II, 85—Consumption of its inhabitants, II, 90—compared with that of the inhabitants of Paris, II, 92—Increase of the consumption of wine since 1791, II, 93—Consumption of bread, II, 94—Legumes cultivated in the floating gardens, II, 96—Causes of the inundations to which the city is exposed, II, iii, 121—Inundation of 1446, II, 117; of 1553, II, 120; of 1607 *ibid*—Great inundation from 1629 to 1634, II, 133—Project of transferring the city elsewhere, II, 137—Operations undertaken to prevent future inundations, II, 152 *et seq.* See *Desague de Huehuetoca*—General view of all these operations, II, 159—Why they do not absolutely secure the city from inundation *ibid.*—Project of a new canal, II, 162—Another project of a level, II, 167—Advantages which the city would experience in supplies of provisions when the new canal will be completed, II, 175; and the interior commerce of New Spain, *ibid.*—Project for making a canal from Mexico to Chalco, II, 177; and another to the port of Tampico, II, 179—Elevation of the town above the sea, II, 183—Its manufactures, III. 461; IV, 4—Quantity of gold wrought there within these five years, III, 477, *et seq.*—Description of the mint of Mexico III, 479—House of separation, III, 483—Works in bronze and furniture manufactured in Mexico, III, 488 It is the principal emporium of the interior commerce of New Spain, III, 492—Details of the population at the enumeration of 1790: 1st monks, IV, 291; 2nd nuns, IV, 292; 3rd secular persons, IV, 292; 4th casts, IV, 293; 5th male students, IV, 294; 6th female schools, IV, 294; 7th

hospitals, IV, 295; 8th prisons, IV, 296; 9th according to their occupations, IV, 297.

Mexitli—See *Teocalli of Tenochtitlan.*

Mextitlan, lake, I, 73.

Meztli Yꝛzaqual, house of the moon, antient pyramid, II, 63.

Micaotl, the road of death, the old name of the valley where the pyramids of Teotihuacan are situated, II, 68.

Michuacan—See *Michoacan.*

Micuipampa, mines, III, 293.

Mier (Don Cosme de y Trespalanos), dean of the high court of justice at Mexico.—Plans which he caused to be drawn of the Desague de Huehuetoca, II, 109 (*)—As superintendant general of the Desague de Huehuetoca, he caused two levels to be constructed, II, 156.

Miguitlan—See *Mitlan.*

Militia—Their number, IV, 248—Their distribution, IV, 252—Why they are so numerous, IV, 258.

Mimbreños—See *Apaches.*

Minerals—Their nature, III, 151—Their average wealth, III, 159—See *Mines.*

Mineria (Cuerpo de) at Mexico—Advances made by it to proprietors of mines, I, 228.

Mines—State of them, III, 104, 454—Mining under the Aztec kings, III, 109—Geographical position of those which are at present wrought, III, 119—General table of all the mines, according to their division into thirty-seven diputaciones, *ibid.*—Geological view of New Spain; rocks, III, 128—Mineral depositories, veins and beds, III, 134—Union in groups, III, 138—Formation of veins, gold, and silver; nature of the minerals, III, 146—Average wealth of the minerals, III, 159—Description of the most metalliferous regions: Guanaxuato, III, 164; Zacatecas, III, 204; Catorce, III, 209; Pachuca and Real del Monte, III, 212; Tasco, III, 224—

Art of the Mexican miner; administration of the mines, III, 231—Amalgamation and smelting, III, 251—Influence of the price of mercury on the progress of mining, III, 283—Quantity of gold and silver extracted from the mines of Mexico, III, 287—Can the annual produce be augmented? III, 294—Common metals: iron, copper, III, 296; tin, *ibid*; lead, III, 298—Metals of limited use, *ibid*—Mercury, III, 299—Coal, III, 320—Salt, III, 321—Soda, *ibid*—Legislation of the mines; supreme council, III, 324—Impost paid by the proprietors, III, 328—Future progress, III, 232—Comparison of the produce of the mines of Mexico with that of the other Spanish colonies, III, 336—Produce of Peru, III, 337; of Chili, III, 352; of Buenos Ayres, III, 353; of New Grenada, III, 379—Table of the actual produce of the mines of the New Continent, (not including contraband) III, 389—Precious metals exported in contraband from the ports of Vera Cruz and Acapulco, III, 390; from Carthagena and Porto Bello, III, 392; by the river Amazons, *ibid*; from Chili, III, 393; from the viceroyalty of Buenos Ayres, *ibid*; from Brazil, *ibid*. Table of the actual produce of the mines of the New Continent (including contraband) III, 394—Table of the actual produce of the mines of Europe, Northern Asia, and America, III, 397—Proportion between the gold and silver extracted from Spanish America, III, 399—Researches respecting the quantity of gold and silver which has flowed from one Continent to the other, since 1492. III, 442, 441 *et seq.*: according to Ustariz, III, 403; according to Moncado, Navarete and Solorzano, III, 405: according to Raynal *ibid*; according to Adam Smith, III, 408; according to Robertson, III, 409; according to the author of *Recherches sur le commerce*, *ibid*; according to Necker, III, 410; according to Gerboux, *ibid*—Quantity of registered gold and silver extracted from the mines of America, from 1492 to 1803, III, 413—Unregistered gold and

silver, III, 417—Total gold and silver, extracted from the mines of America since 1492, III, 418—Proportion in which the different colonies have contributed, III, 420—Proportion between gold and silver, III, 421—Amount of gold and silver found at the conquest, which became the spoil of the conquerors, III, 422—Quantity of specie in circulation in the New World, III, 428—Quantity of gold and silver which passes immediately into Asia and Africa, without touching Europe, III, 430—Total quantity of gold and silver which Europe has received from the New World since 1492, resulting from the preceding calculations, III, 431—Proportion in which these riches have flowed into Europe at different periods, III, 434—Researches into what has become of these riches, III, 436—Different ways by which gold and silver flow into Asia: 1st, by the commerce of the Levant, Egypt, and the Red Sea, III, 441; 2nd, by the East Indies and China, III, 442; 3rd, by the Russian commerce, III, 449—Accumulation of gold and silver in Europe, III, 452.

Miners, degree to what they have carried the art of mining in Mexico, III, 233—Miners are free in New Spain, I, 124, III. 246.

Mint at Mexico, III, 479—Quantity of money annually coined there, III, 481—Annual profit which the king derives from it, IV, 209—Comparison with the mint of Paris, IV, 358 *et seq.*

Missionaries, hostilities which they sometimes commit against the Indios Bravos, I, 237.

Mita, (La) a law which compels the Indians to work in the mines, is no longer in force in Mexico, I, 124.

Mitla, (Palace of) its ruins, II, 239.

Mixteca, a mountainous country, II, 237.

Mociño, (M.) see *Moziño.*

Moctezuma, river, I, 72.

Mompox, a town in the kingdom of Santa Fe, the principal market of the gold of that country, III, 384.

Moncado, (Sanchez de) his estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 403.

Monclova, (Count de) viceroy of Mexico, entrusts the superintendancy of the Desague to Father Cabrera, II, 142.

Monclava, a military post, II, 283.

Monteleone, (Duke of) his wealth, I, 227—Monument erected by him to Cortez, II, 52—His house is situated where the palace of Montezuma stood, II, 70—See Estado, *(Casa del)*.

Moore, (Hamilton) how he fixed the position of Vera Cruz, I, xxxiii.

Montalvo, (Berria de) his memoir on the metallurgical treatment of minerals, III, 254.

Montaños, (Francisco) whether he entered the Crater of the Popocatepetl, III, 475.

Monterey, (Count de) viceroy of Mexico, sends Oñate to New Mexico, II, 309.

Monterey, (shell of) III, 83.

Monterey, bishoprick—Its revenues, I, 231.

Monterey, town of the intendancy of San Luis Potosi, II, 283.

Monterey, in New California—Its geographical position, I, lvi—See *San Carlos de Monterey*.

Montesclaros, (Juan de Mendozo y Luna, Marquis de) viceroy of Mexico praised, II, 48.

Montesclaros, town, II, 305.

Montezuma, see *Moteuczoma*.

Moqui, a territory inhabited by savage Indians, II, 287—Town which Father Garces found there, II, 315.

Moquihuix, last king of Tlatelolco, II, 27.

Moraleda, (Don Jose) his voyage, I, 42; IV, 285.

Moran, description of its mines, III, 212, 224.

Mortmain of the clergy; if it is contrary to the progress of agriculture, III, 102.

Moteuczoma, true name of Montezuma. II, 9 (‡).—Two princes of that name, *ibid.*—Limits of their empire, I, 11.

Motezuma, (*Antonio*) author of a manuscript on the history of Mexico, II, 74 (*).

Motezuma, (*Pedro*) son of Montezuma, II.—See *Tohualicahuatzin.*

Mothes, (*M. Frederic*) his memoir on the mines of Potosi, III, 171 (†).

Motolina, author of a manuscript history of Mexico, II, 74 (*).

Moyotla, one of the quarters of Tenochtitlan, II, 28.

Mozino, (*Don Francisco*) his botanical labours, and his voyage to Nootka, II, 370—His vocabulary of the Nootkian language, II, 346.

Muerto. desert, II, 310.

Mu attoes, I, 130; II, 344.

Mulberries, the government prevents their being cultivated in Mexico, II, 517.

Murex of Mexico, III, 83.

Murphy, (*Don Thomas*) his patriotic views, I, 112.

Muslin, quantity imported into Mexico in 1803, IV, 45, 46.

Mutis, (*Jose Celestino*) his great botanical labours, I, 215—He discovered the mercury mine of Quindiu, III, 306.

N.

Nabajoa, mountains, II, 287.

Nacogdoch, the nearest Spanish post to Louisiana, II, 278.

Nadal, (*Pedro*) makes astronomical observations on the Rio de Balzas, II, 296.

Nahualtecs, their arrival in Mexico, I, 133.

Nais, quantity imported into Vera Cruz in 1803, IV 45.

Napestla, river, may be identical with the Arkansas, II, 313.

Narvaez, (Panfilo) his excursions, II, 337.

Nasas, river, II, 294.

Natchitoches, a country of the United States of America, bounded by the intendancy of San Luis Potosi, II, 276.

Nauhcampatepetl, (Coffre de Perote) one of the most elevated summits of the Cordillera of Mexico, I, 62—Signification of this name, *ibid.* (*).

Navarete, (Pedro Fernandez de) his estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 405.

Navincopa, discovers the mine of Huancavelica, III, 310.

Necker, his estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 410.

Née, (M. Louis) botanist of the expedition of Malaspina, II, 377.

Negros, not numerous in Mexico, I, 236—Laws favourable to their freedom, I, 241.

Nemontemi, complimentary days of the Mexican year, II, 361.

Nevado, signification of this word, II, 191 (†).

New-Albion, see *New California*.

New-Biscay, province, II, 284.

New California, province—Its coasts was surveyed by a Spanish expedition and by Vancouver, I, lvi—Its extent, II, 235—Is also called *New Albion*, II, 337—Missions and presidios which the court of Spain has established there, II, 338—Its climate, II, 340—Increase of its population, II, 343; and of the produce of the soil, *ibid*—Nations who inhabit it, II, 345—Difference between their language, and the Aztec, II, 346—Their taste for hot-baths, II, 348—Their occupations, II, 349—Animals of

New California, II, 350—Missions which the Spaniards have founded in that country, II, 353; IV, 300.

New Galicia, kingdom—Its extent, I, 270.

New Grenada, viceroyalty—Mercury which it furnishes, III, 306—Quantity of precious metals which it furnishes, III, 379—Balance of its annual commerce, IV, 128—Net revenue which the king of Spain derives from it, IV, 240—Its gross revenue, IV, 241.

New Leon, kingdom, II, 272.

New Mexico, province—Its extent, II, 307—Its climate, II, 310—Its rivers, II, 311—Indians inhabiting it, II, 313—Its towns, II, 316 *et seq.*

New Navarre, see *Sonora*, province.

New Santander, province, II, 272.

New Santander, town, II, 282.

New Spain, maps of that country, I. ii—See *map (reduced) of the kingdom of New Spain*—Geographical positions of that country determined by astronomical observations, I, cxxxiv—cxliii—Points of which the heights have been measured, I, cxliv. *et seq.*—Extent of the country, I, 5; II, 1; IV, 322—It is the most important possession of the Spaniards, I, 9—Limits of the country, I, 10—This name originally designated only Yucatan, I, 11—It is not synonimous with Anahuac, I, 12—Comparison of its extent and population with those of Spain and the United States of America, I, 13—Configuration of its coasts, I, 16—Points at which this country is narrowest between the two seas, and project of joining these two seas, I, 18—See *communications*, &c.—Physical view of the country, I, 46—Its climate, I, 47—Construction of its mountains, I, 48—Description of their Table Lands, I, 56—Of their highest summits, I, 62—Climate of the coasts, I, 64—Distinction of the country into *terras calientes templadas* and *frias*, I, 65—Heights at which the metals are found, I, 70—Navigable rivers, I, 71—Lakes, I, 73—Vegetation, I, 73—See *plants* and *vege-*

tables—Limits of snows, I, 74—Heats of summer, I, 75—Rains, I, 76—Earthquakes and volcanic explosions, I, 78—Physical advantages of this country, I, 79—Dependence in which it is on the Havanah with respect to its military defence, I, 83—Dangers of navigation on its coast, *ibid*—Population, I, 278; II, 1—See this word—Divisions of the territory, 1st, before the Count de Galvez into ten provinces, I, 265—2d Into fifteen intendancies and districts, I, 266—3d Into three regions, I, 268—4th Into the kingdoms of Mexico and New Galicia, I, 270—5th Into New Spain proper and internal provinces, I, 271—Its limits to the north and east, I, 273—Comparison of its extent and population with those of some other countries, I, 274—Division of the internal provinces, II, 279—Surface and population according to the territorial divisions, I, 380—Disproportion between the intendancies with respect to their extent, I, 282; with respect to their population, I, 284—Their relative population, I, 285—Statistical analysis of New Spain, II, 1—1st Intendancy of Mexico, II, 3—189—See *Mexico*; 2d of Puebla, II, 190—203; 3d of Guanaxuato, II, 204—207—4th of Valladolid, II, 208—226; 5th of Guadalaxara, II, 227—231; 6th of Zacatecas, II, 232—234; 7th of Oaxaca, II, 235—242; 8th of Merida, II, 243—249; 9th of Vera Cruz, II, 250—270; 10th of San Luis Potosi, II, 271—283; 11th of Durango, II, 284—295; 12th of Sonora, II, 296—306; 13th province of New Mexico, II, 307—318; 14th of Old California, II, 319—334; 15th of New California, II—335, 355—See the detail under these different words: *Puebla*, *Guanaxuato*, *Valladolid*, &c. Cursory view of the Great Ocean, from the port of San Francisco to the Russian settlements, II, 357—Voyages which have been undertaken there, II, 359—See *Cabrillo*, *Gali*, *Viscayno*, *Perez*, *Heceta*, *Ayala*, *Bodega*, *Martinez*, *Haro*, *Elisa*, *Fidalgo*, *Malaspina*—State of the agriculture of New Spain, II, 400—III, 103—See

agriculture, cerealia, plants, vegetables—State of the mines, III, 104—454—See *mines*—State of the manufactures, III, 455—489—See *manufactures*—State of the commerce, III, 489—IV, 203—See *commerce*—Finances, IV, 205—See *revenue*—Military State, IV, 247.—282—See *force (armed)*.

New Spain proper, its extent, I, 270.

Nezahualcojotl, king of Tezcuco, II, 117.

Nicaragua, (Lake of) might serve to effectuate a communication between the two seas, I, 23.

Night, (melancholy) what period so called in the history of Mexico, II, 10.

Niño, (Andre) affirmed that there was no strait between south and north America, IV, 19.

Niparaya, divinity of the Californians, II, 332.

Niza, (Marcos de) made astronomical observations on the Rio de Balzas, II, 290—His fabulous accounts of the town of Cibola, II, 323.

Niza, (*Taddeo de*) a baptized Indian, author of a manuscript work on the history of Mexico, II, 74 (*).

Noble Indians, see *Caciques*.

Nochistongo, (subterraneous galery of) history of that work, II, 125, *et seq.*

Nombre de Dios, town, II, 294.

Nopaleros, planters who rear the cochineal, III, 77.

Nordenflycht, (the Baron de) his geological cabinet, III, 311.

Norte, (Rio del) may facilitate the commerce between the two seas, I, 22—Description of that river, II, 311—Its loss in 1752, II, 312.

Nortes de Hueso colorado, north winds of Mexico, I, 85.

Nootka, (*Bay of*) was visited before Cook by Juan Perez, II, 364; and named port of San Lorenzo, *ibid.*—Settlements which the Spaniards made there, II, 369—Description of the country, II, 372—Discussion between

Spain and the English respecting this possession, II, 373, *et seq.*

Nuestra Señora de Guadalupe, a mineral spring, II, 101.

Nuñez (Alvar) Cabeza de Vaca, his voyage to New California, II, 336.

Nuts, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

O.

Oats, their cultivation in Mexico, II, 484.

Oaxaca, bishoprick—Its revenues, I, 231.

Oaxaca, intendancy—Number of ecclesiastics contained in it, I, 230 (*)—Its extent and climate, II, 235—Aztec monuments which it contains, II, 238—Cochineal is cultivated there, II, 241—Its towns and mines, II, 241; III, 127.

Oaxaca, valley, forms the marquisate of Cortez, II, 7 (†).

Oaxaca, town, II, 24.

Obrajes, great cloth manufactories at Queretaro, III, 462.

Obregon, licenciado—*his* project for preserving Mexico from inundations, II, 123.

Obregon, first Count of Valenciana, III, 193.

Obregon, (Don Ignacio) information furnished by him to the author, I, lxxxviii.

Obsidian, found among the ruins of the Casa Grande, II, 302—Mines of, wrought by the Aztecs, III, 116.

Oca, (*oxalis tuberosa*) Its cultivation in Mexico, I, 500.

Ocano, (*Rodriguez*) discovers the mines of Chota, III, 343.

Oceloxochitl, see *Cacomite*.

Ocoltan, salt work of the intendancy of Puebla, II, 199.

Octli, see *Pulque*.

Oil, (lintseed) amount imported into Mexico in 1803, IV, 44.

Oil of olives, amount imported into Vera Cruz, in 1802, IV, 33; in 1803, IV, 44; in 1804, IV, 364.

Old California, see *California*.

Olives, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Olive tree, the government endeavours to prevent its cultivation, II, 517.

Olmos, (Andres de) author of a manuscript history of the conquest of Mexico, II, 74 (*).

Oltmanns (M. Jabbo) his operations respecting the geography of Mexico, I, xcvii, c, cxxx; I, 272, II, 210 (*).

Oñate, (Juan de) his conquest of New Mexico, II, 309.

Opeloussas, (County of) province of Louisiana, bounded by Mexico, II, 277.

Ordas, (Diego) whether he descended into the Crater of the Popocatepetl, III, 473—He discovered the river of Huasacualco, IV, 18.

Organos, (los) mountains, II, 28.

Orizaba, mountain—Confusion which prevails in the maps of Jefferys and Arrowsmith with respect to this mountain, I, xlvi—It is one of the highest summits of the Cordillera of Mexico, I, 62—Description of that mountain, II, 257.

Orizaba, town, II, 270.

Oro, (Real del) mines, II, 226.

Oropeza, a title belonging to the family of the Inca Sayri-Tupac, I, 201.

Orta (Don Bernardo de) captain of the port of Vera Cruz—His meteorological observations, I, 84, IV, 195.

Ostimury, province, II, 297.

Otero, (Pedro Linieno) one of the undertakers of the mine of Valenciana, III, 194.

Oteysa, (Don Juan Jose) how he fixed the longitude of Durango, I, lxiii—His plan of that town, I. lxxviii—His calculation of the surface of Mexico, II, 272; of the pyramids of Teotihuacan, II, 63—His researches respecting the environs of the town of Durango, II, 291.

Otomites, a wandering tribe to the north of Mexico, I, 12; in the intendancy of Valladolid, II, 222.

Ounigigah, see *River of Peace.*

Ovando, riches sent by him into Europe, III, 425.

Owkyhee, island—Was discovered before Cook, by the Spaniards, IV, 82.

P.

Pachuca, river, II, 108.

Pachuca, town of the intendancy of Mexico, II, 188—Description of its mines, III, 212.

Packthread, amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.

Padilla, (Christobal de) his project for draining the valley of Mexico by the natural gulphs of Oculma, II, 135.

Pagaza, (Don Juan de) his maps of New Galicia and New Biscay, I, lxxx.

Pages, his journey by land from Louisiana to Acapulco, II, 279.

Palafox, (Don Juan de) bishop of Puebla and viceroy of Mexico—His instruction respecting the Desague, II, 109 (*).

Pames, Indians, II, 205.

Panama, (Isthmus of) uncertainty which prevails respecting its form and its breadth, I, 29; IV, 163—Causes of the unhealthiness of the country, IV, 153.

Panuco, river, II, 250.
Papagallo, tempest, I, 86.
Papaloapan, river, II, 254.
Papahua, Tlemacazque or *Teopixqui*, Toltec and Aztec priests, II, 65.
Papalotla, river, II, 107.
Papanila, (pyramid of) monument of the Aztecs, II, 258.
Papas, see *potatoe*.
Paper, none manufactured in Mexico, III, 466—Amount annually imported into Vera Cruz, IV, 31.
Paper, (*white*) amount imported into Vera Cruz by individuals in 1802, IV, 33, 35; in 1803, IV, 45, 46; on account of the king in 1802, IV, 43; in 1803, IV, 51—Amount imported into Vera Cruz in 1804, IV, 364.
Paper, (foul) amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 45.
Parallel of great heights, geological phenomenon, II, 220.
Parallelism of beds, observed in great extents of country, III, 177 (§).
Parras, lake, I, 73; II, 294.
Parras, town, II, 294.
Partido, (Rio) a river whose existence is problematical, I, 24.
Pasco, (mines of) III, 391.
Pascuaro, or *Patzquaro*, town, II, 224.
Pasquiaro, town, II, 294.
Passage to the north west of America, a problem which occupied the Spaniards of the 16th century, II, 359.
Passo (Rio del) may serve to establish a communication between the two seas, IV, 23.
Passo del Norte, a military post, II, 317—Description of the country where it is situated, *ibid.*
Patzcuaro, lake, I, 73; II, 208.
Pavon, (M. Don Jose) one of the heads of the botanical expedition of Peru, I, 215.

Payos, Indians who periodically visit the Huaytecas and Chonos Islands, IV, 286.

Peace, (river of) may facilitate the communication between the two seas, I, 19.

Pearl fishery, in California, II, 328, III, 79.

Pecos, river, perhaps identical with the Red River of Natchitoches, II, 313.

Peña, (Don Thomas de la) the associate of Juan Perez—His manuscript journal, II, 368 (*).

Peñon de los Baños, a porphyritic rock which contains a spring of mineral water, II, 101.

Pensions paid by the government—Their amount, IV, 231.

Pepper, amount imported into Vera Cruz in 1802, IV, 35.

Perez, (Don Juan) his voyage to the north west of America, II, 363—He was in the seas of Nootka before Cook, II, 364.

Pericues, people of California, II, 232.

Perote, town, II, 269.

Perote, (Coffre de) see *Coffre*.

Peru, its population, I, 92—Mercury which the kingdom furnishes, III, 308—Produce of its gold and silver mines, III, 337—Celebrated mines of this kingdom, III, 338—division of the kingdom into provinces and intendancies, III, 340—Process of amalgamation followed there, III, 350—Balance of its commerce, III, 128—Net revenue which the king of Spain derives from it, IV, 240—Gross revenue of that viceroyalty, IV, 241—Its armed force, IV, 267.

Petatlan, village, II, 211.

Philippine Islands, precious metals annually carried there from Mexico, IV, 74—Supply annually drawn by them from Mexico, for expence of administration, IV, 236—Their gross revenue, IV, 241.

Piastres, quantity coined in 1790 at the mint of Potosi, III, 378.

Pichardo (Father Don Jose Antonio) a learned monk of San Felipe Neri at Mexico, I, lxxvii; II, 22 (§).

Pilchards amount annually imported into Vera Cruz in 1802, IV, 33—See *fish, (salted).*

Pimas, a tribe of Indians, II, 298.

Pimento, quantity imported into Mexico in 1803, IV, 46.

Pimento of Tabasco, province which produces it, II, 253—Amount annually exported from Vera Cruz, IV, 31; in 1802, IV, 37; in 1803, IV, 48—Influence which the edict of free trade had on its exportation, IV, 100.

Pimentel, { *Antonio* / *Fernando* } See *Ixtlilxochitl.*

Pimeria, district, II, 298—Divided into Alta and Baxa, II, 299.

Pimeria Alta, (mountains of) I, 63.

Pinahuizapan, see *Perote.*

Pinadoro, (Bernal de) his expedition to California, II, 329.

Pines, (Bay of) at present Monterey in New California—See *Monterey.*

Pistachios, (earth) See *Mani.*

Pitch, quantity imported into Mexico in 1803, IV, 47.

Pite, amount exported from Mexico in 1803, IV, 40—See also *Maguey.*

Plants, (aromatic) amount imported into Vera Cruz, in 1802, IV, 33; in 1803, IV, 44.

Plants of New Spain, I.—Plants serving for food to the people: Ist. The banana, II, 414; 2d the manioc, II, 429; 3d, maize, II, 439; 4th, European Cerealia, II, 451; 5th, the potatoe, II, 484; 6th, the oca, II, 500; 7th, the igname, *ibid;* 8th, batates, II, 503; 9th, the cacomite, II, 505: 10th, the tomatl, *ibid;* 11th, the earth pistachio, *ibid;* 12th, pimento, *ibid;* 13th, the chimalatl, II, 506; 14th, rice, *ibid;* 15th, all the kitchen herbs and fruit trees of Europe, II, 509,—II. Plants

furnishing raw materials for manufactures and commerce, III, 1; 1st, the sugar cane, III, 2; 2d cotton, III, 18; 3d, flax and hemp, III, 20; 4th, coffee, III, 21; 5th cocoa, III, 23; 6th vanilla, III, 27; 7th sarsaparilla, III, 36; 8th jalap, III, 37; 9th, Tabasco, III, 39; 10th, indigo, III, 44—Botanical details respecting the plants, cultivated in New Spain, IV, 335—See also *vegetables*.

Platano, a species of banana, II, 417.

Platina, is not found in Mexico, III, 150; nor in the viceroyalty of Buenos Ayres, III, 354 (*); is found at Choco and Barbacoas, III, 285.

Poitos, a species of Indian slaves, I, 238.

Pomar, a baptized Indian, author of a manuscript on the history of Mexico, II, 74 (*).

Ponce, a baptized Indian, author of a manuscript on the history of Mexico, II, 74 (*).

Popayan, quantity of gold coined there between 1788 and 1794, III, 381.

Popocatepetl, the highest summit of the Cordillera of Mexico, I, 62—Signification of that name, *ibid*, (*)—Its height, II, 50—Was its crater visited by Diego Ordaz? III, 473.

Population of New Spain, I, 89, *et seq.* 110; IV, 127—It is greater in the interior than on the coasts, I, 91—It has increased since the arrival of the Spaniards, I, 95—Its state in 1793, I, 97—It has greatly augmented since, I, 99—Relation of the births to the deaths, I, 101—Proportion of the births and deaths to the population, I, 105; compared with other countries, I, 107—State of the population in 1803, I, 109—Causes which arrest its progress: 1st, the small pox, I, 111; 2d, the matlazahuatl, I, 117; 3d, famine, I, 119—The labour of the mines ought not to be included among the causes, I, 123; nor the yellow fever, I, 128—See *yellow fever*—The population is very little increased by the arrival of new colonists, *ibid.*—Different casts of inhabitants, I, 130: 1st Indians, I, 131—

203; 2d, Whites, I, 204—235; 3d Negroes, II, 236; 4th, casts of mixed blood, I, 243; proportion of males to females, I, 247—Relation between the longevity and the difference of casts, I, 250—Influence of the mixture of casts on society, I, 257—Comparison of the population with that of some other countries, I, 257—Population according to the territorial divisions, I, 280—Disproportion between the population of the different intendancies, I, 284—Relative population of the intendancies, I, 285.

Porto Bello, measures taken by the Governor Emparan to improve its climate, IV, 154.

Porto Rico, island—Supply which it annually draws from Mexico for the expences of administration, IV, 235.

Ports of New Spain, their relative importance, IV, 118.

Ports, projected in place of Vera Cruz, I, 82.

Positions, (geographical) of Mexico determined by astronomical observations, I, cxxxiv—cxliii.

Possessions, (Russian) in America, project formed by the Court of Madrid for attacking them, II, 387—Position of these factories, II, 389.

Posts, established by Count Florida Blanca from Paraguay to the north west coast of North America, I, 7—Annual amount of the post office revenue in Mexico, IV, 214.

Potatoe, its introduction into Mexico, II, 484—It is indigenous in Peru — Discussion on this subject, II, 488—Its actual cultivation, II, 496.

Potosi, (Viceroyalty of Buenos Ayres) quantity of silver extracted from its mines, III, 171—Royal duties paid on the silver extracted from the Cerro de Potosi, III, 356—Result of this Table, III, 360—Produce of its mines, III, 362—Mining from 1556 to 1789, III, 372—Diminution of the *contents* of its minerals, III, 374—Manner in which they were antiently treated, III, 375—

Amalgamation is introduced there, III, 377—Quantity of piastres coined there in 1790, III, 378.

Poultry, rare before the conquest, III, 52.

Powder, (gun) its manufacture is a royal monopoly, III, 469.—The only existing manufactory, III, 470—Amount manufactured, III, 471—Amount of the annual revenue drawn by the king from the sale of this commodity, IV, 214.

Presidios, object of their establishment, IV, 256.

Prisons, expence to the state, IV, 231.

Productions of the animal kingdom in Mexico, III, 46—95—See *Zoology*.

Productions of the mineral kingdom of Mexico, III, 104—323—See *mines*.

Productions of the vegetable kingdom of Mexico, II, 414—III, 46—See *plants and vegetables*.

Produce of land, its annual value, III, 97.

Provincias internas, their divisions: 1st into internal provinces of the viceroyalty and of the commandant, I, 271; 2d into eastern and western, I, 279—Country comprehended in them, I, 280—Their surface and population, *ibid.*—Their relative population, II, 2.

Prunes, amount imported into Mexico in 1803, IV, 44.

Puebla, intendancy—Number of ecclesiastics contained in it, I, 230 (*)—Its extent and population, II, 190—Proportion of the casts, II, 197—Number of the towns and villages, II, 198—Its industry, II, 199—Its salt works, *ibid*—Its marble, *ibid*—Language of the inhabitants *ibid*—Its towns, II, 200—Its relative population, II, 203—Its mines, *ibid*—Its manufactures, III, 461.

Puebla de los Angeles, capital of the intendancy of Puebla—Its population, II, 200—Its manufactures, III, 461—467.

Puente del Salto, bridge of the cascade of the Desague de Huehuetoca, II, 152.

Puerco, river, II, 2-1, 312.

Pulque, a liquor made of the juice of the Magney, II, 521—Produce of the impost on this liquor, IV, 216.

Pulque de mahis, a spirituous liquor made of maize, II, 449.

Purificacion, town, II, 231.

Purissima, celebrated mine of Catorce—Its wealth, III, 211.

Purissima Concepcion, village of California, II, 353.

Purissima Concepcion de Alamos de Catorce, mines, II, 283.

Pyramids of San Juan de Teotihuacan, II, 63—Their height, *ibid*—Their antiquity, II, 64—Interior construction, *ibid*—Their height, compared with that of the pyramids of Egypt and Cholula, II, 195 (†).

Q.

Quadra, (Don Juan de la Bodega y) how he fixed the position of San Lucas, I, lv—His map of California, I, lxxxi—His voyage to the north west coast of America, II, 365, *et seq.*

Quarterons, a Mexican cast, I, 245.

Quauhnahuac, see *Cuernavaca.*

Quauhtemotzin, last king of Mexico, II, 57 (*)—Heroic anecdote of that prince, II, 77.

Quauhtitlan, see *Guautitlan.*

Queretaro, town of the intendancy of Mexico—Proportion between the casts who inhabit it, and between the sexes, I, 254—Its population, I, 188—Its manufactures, III, 460—467.

Quetlabaca, king of Mexico—See *Cuitlahuatzin.*

Quiabislan, see *Cuiahuitzla.*

Quimper, (Don Manuel) his voyage to Nootka, II, 380.

Quinquina, amount imported into Vera Cruz in 1802, IV, 36; exported in 1802, IV, 37—It has not been successfully used in the yellow fever, IV, 189—Natural affinities of the Genus Cinchona, II, 402 (*)—See also *vegetables*.

Quinterons, a Mexican cast, II, 245.

Quiroga (*Vasco de*) first bishop of Mechoacan, the benefactor of the Indians, II, 225.

Quirotes, a nation of New California, II, 345.

Quivira, a fabulous town, II, 303—324 (*); III, 298, (*).

Quiscano, (*Don Josef*) his table of the mine of Valenciana, III, 164 (*).

R.

Raspadura, (*ravin of*) forms a communication between the Atlantic Ocean and South Sea, I, 40.

Rayas, mines, II, 206.

Raynal, his opinion of the wealth of the mines of New Mexico, II, 307—His estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 405.

Real del Monte, description of its mines, III, 212.

Reales de minas, their nomenclature, III, 119, *et seq.*

Reales de plata, three species of coins of that name, III, 360 (†).

Regla, (*Count of*) his wealth, I, 225—He is proprietor of the mines de la Biscaina, III, 218.

Reinaga, (*Juan de*) introduced camels into Peru, IV, 15.

Repartimientos, oppression which the Corregedors exercised on the Indians—They are suppressed by Charles III, I, 183.

Revenue of New Spain—Influence which the freedom of

trade has had on its increase, IV, 102—Its annual amount, IV, 206—Its branches; 1st Revenue from the produce of the mines, IV, 209; 2nd from the manufacture of tobacco, IV, 210; 3rd Alcavalas, IV, 211; 4th Indian capitation, IV, 212; 5th Duty on pulque, IV, 213; 6th Almoxarifazgo, IV, 214; 7th sale of cruzada, post, sale of powder, annata, cards, stamps, duty on cock-fighting, *ibid;* 8th Duty on snow, IV, 215; Comparison between the years 1746 and 1804, IV, 216; Amount of the tax per head. IV, 217; Expence of collection, IV, 219—Amount of the net revenue or *Liquido remisible*, IV, 236 *et seq.*—See also *Expences.*

Revillagigedo (Count de) viceroy of Mexico—Enumeration of the inhabitants of Mexico made by his orders, I, 96—Police established by him in the streets of Mexico, II, 44—Expedition sent out by him to Nootka, II, 380—Table of the revenues of the state and expences of collection drawn up by his orders, IV, 221; and of the public expence, IV, 224—His administration praised, IV, 234.

Ribera (Enriquez de) archbishop of Mexico, viceroy of Mexico, II, 142.

Rice—Its cultivation is neglected in Mexico, II, 506—Quantity imported in 1803, IV, 47.

Rio—All the words compounded with this must be sought for under the annexed word.

Rio (Don Andres del) professor of mineralogy in the school of mines of Mexico, I, lxxxvii, 217; II, 223.

Rivero (Don Pedro de)—His itineraries, I, lxi.

Rixi (Josse) monk, sowed the first European grain at Quito, I, 452.

Roads which cross the valley of Mexico, II, 7—Those of New Spain the most frequented by commerce, IV, 1—Their division into longitudinal and transversal, *ibid.*—Description of the road from Mexico to Acapulco, IV, 3; from Mexico to Vera Cruz, IV, 6; from Perote to Vera

Cruz, IV, 8; from Mexico to Vera Cruz by Orizaba, IV, 12.

Roberedo (Don Antonio) astronomer at the Havannah—How he fi[x]s the longitude of Mexico, I, xxx.

Robertson—His estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 409.

Robledo, a defile in New Mexico, dangerous for travellers, II, 310.

Rocks; formations; geological constitution of New Spain; general considerations, I, 55 *et seq.*; III, 128 *et seq.*; IV, 349—I. *primitive rocks*: granite and gneiss, II, 236; III, 213, 306, 387; micaceous slate, *glimmer-schiefer*, II, 130, 134, 148; primitive slate, ur-thonschiefer, III, 131, 134, 176, 226; serpentine, III, 131, 176 (Syenite, III, 176, 180, 183, 210)—II *Transition rocks*: transition slate, übergangsthonschiefer, III, 205; 210 (transition green-stone, III, 180); transition porphyry, übergangs porphyr, III, 132, 134, 180, 182, 205, 208, 254; grauwakke, transition sand stone, II, 233, III, 132, 205, 208; transition lime-stone, übergangskalkstein, II, 199; III, 132, 183, 207—III. *Secondary rocks*: old sand stone, III, 178, 206 (slate clay, schieferthon, coal, III, 301, 321); primitive lime-stone, alpenkalkstein, III, 133, 210, 213, 226, 311, 315, 344, 349; jura lime-stone, jura-kalkstein, III, 133, 179, 206, 214; old gyps, alter gyps, III, 214 (rock salt, III, 321); new sand stone, neuer bunter sandstein, III, 214, 311; new gyps, neuer gyps, III, 214; new or superior lime-stone, III, 311—IV. *Alluvial rocks*, III, 141, 150, 296, 306, 382, 385, 393, 422—V. *Volcanick rocks* trap formation, II, 191, 210, 221, 228, 257, 258, II, 213; trap porphyry, trap-porphyr, I, 61 (*), 74; II, 212, 272; III, 313, 214; basalt, amygdaloid, mandelstein, I, 76; II, 39, 207, 212, 215; III, 183, 210, 213; obsidian pearl-stone, II, 302; III, 116, 214.

Rodriguez (Father Diego)—How he fixed the longitude of Mexico, I, xxvi.

Rodriguez (Don Juan Josef) assisted the author in the construction of geological maps, I, cxix (*).

Roman (Antonio)—His project for draining the valley of Mexico, II, 135.

Romeros, a rich Indian family at Cholula, I, 186.

Rosario, town, II, 305.

Roucou—Amount exported from Mexico in 1802, IV, 37; in 1803, IV, 48.

Roxas (Don Juan)—His experiments on the temperature of the mineral waters of San Jose de Comangillas, II, 207.

Rubin de Celis, found an aerolith near Olumpa, II, 293.

Ruis (Don Hippolito)—His voyage to Peru, I, 215.

Rul (Don Diego) one of the proprietors of the mine of Valenciana, III, 171.

Rumsen, a nation of New California, II, 345.

Rye—Of its cultivation in Mexico, II, 483.

S.

Sabina, a river which bounds the Spanish establishments to the north east, II, 281.

Sabino de Santa Maria del Tule, a tree famous for the thickness of its trunk, II, 237.

Sacks—Amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47; exported for other ports of Spanish America in 1802, IV, 38; in 1803, IV, 47.

Saffron—Amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44; in 1804, IV, 364.

Sahagun, author of a manuscript on the history of Mexico, II, 74 (*).

Saint Charles of Perote, a fort, II, 269—Its importance, IV, 275.

Saint Domingo—Quantity of sugar exported by that island in 1788 and 1799, III, 14—Assistance which the Spanish part of that island drew annually from Mexico for expences of administration, IV, 235.

Saint-Elie (Mountain)—Its height, I, 62; II, 378.

Saint-George (Gulf of) one of the points by which a communication has been projected between the two seas, I, 42.

Sainte-Croix (M. Felix Renouard de)—Information furnished by him respecting the commerce of India and China, and the sum of money annually sent there from Europe, III, 444, IV, 339.

Salamanca, presidio, II, 244.

Salamanca, town, II, 206.

Salaries of the viceroys and officers; their annual amount, IV, 231.

Sacedo (Nemesco) commandant general of the provincias internas, I, 278.

Salinas (Marquis de)—See *Velasco*.

Salmeron (Martin) a Mexican giant, I, 152.

Salsen, a nation of New California, II, 345.

Salt—Want of in New Spain, III, 321—Amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47; in 1804, IV, 364.

Saltillo, town, II, 294.

Salto de Alvarado, name of a bridge at Mexico, II, 73.

Salto del Rio de Tula, extremity of the Desague de Huehuetoca, II, 152.

Salvatierra (Father Juan Maria)—His voyage to California, II, 323, 331—His manuscript map, II, 335, (*).

Samues, a tribe of Indians, II, 205.

San Antonio de Bejar, town, II, 283.

San Antonio de los Cues, town, II, 242.

San Antonio de Padua, village, II, 354.

San Blas, port, II, 311.

San Buenaventura, village, II, 353.

San Carlos de Monterey, capital of New California, II, 354.

San Christobal, lake, II, 34.

San Christobal (Marquis de) known in France by the name of M. Tereros, II, 225.

San Diego, village, II, 353.

San Felipe y Santiago, town, II, 305—See *Cinaloa*.

San Fernando, village, II, 354.

San Francisco, the most northern settlement of the Spaniards, II, 335.

San Francisco, village, II, 365.

San Gabriel, village, II, 354.

San Jacinto, now Mount-Edgecombe, discovered by Quadra, II, 366.

San Jose, village of California—Its geographical position, I, lii—Details respecting this mission, II, 333.

San Jose de Comangillas (Hot-springs) II, 207.

San Jose del Parral, town, II, 295.

San Juan Bauptista, village, II, 355.

San Juan Capistrana, village, II, 353.

San Juan del Rio, town of the Intendancy of Durango, II, 294.

San Juan del Rio, town of the Intendancy of Mexico, II, 188.

San Juan de Teotihuacan—Two toltec pyramids there—See *Pyramids*.

San Juan de Ulua, fort, II, 262; IV, 274.

San Lorenzo, name given to the port of Nootka by Juan Perez before Cook, II, 364.

San Lucas—Its geographical position, I, lvii.

San Luis, province of the Intendancy of San Luis Potosi, II, 272.

San Luis Obispo, village, II, 354.

San Luis Potosi, intendancy—Its extent, II, 271—Division of its territory, II, 272—Description of the country, II, 273—Discussion respecting its limits, II, 276; IV, 269—

Description of the road leading to Louisiana, II, 279—Its towns, II, 282.

San Luis Potosi, town, II, 282.

San Luis Rey de Francia, village, II, 353.

San Miguel (Don Antonio de)—Bishop of Valladolid—Memoir presented by him to the king in favour of the Indians, I, 189.

San Miguel el grande, town of the intendancy of Guadalaxara, II, 207—Its manufactures, III, 460.

San Pedro, a river which disappeared, II, 212, 217.

San Pedro de Batopilas, town, II, 295.

San Pedro de Jorullo, hacienda, II, 212.

San Pedro de Tlahua, a village built on the dike which separates the Lakes of Chalco, and Xochimilco, II, 111.

San Roman (Marquis de) director of the mint of Mexico, III, 479.

San Saba, river, II, 271.

Sandoval (Gonzales de)—Conquers the province of Tehuantepec, IV, 19.

Sandoval (Sebastian) y Guzman—His works on the produce of the mines of Potosi, III, 361.

Sandwich—Political observations on these islands, IV, 85.

Sanpueltepec, mountain, II, 236.

Santa Ana, mines, II, 206.

Santa Ana, mission of California, II, 333.

Santa Barbara, village, II, 353.

Santa Cruz, village, II, 355.

Santa Cruz de la Cañada y Taos—See *Taos*.

Santa Cruz de Nootka—Description of that port, II, 371.

Santa Fe (Aqueduct of) brings fresh water to Mexico, II, 45.

Santa Fe, capital of New Mexico, II, 317.

Santa Fe, in the valley of Mexico, a royal powder manufactory, III, 470.

Santa Fe de Bogota—Quantity of gold coined there from 1789 to 1795, III, 380.

Santa Fe de Goanajoato—See *Guanaxuato.*

Santa Maria (Compuerta)—Lock of the Desague de Huehuetoca, II, 151.

Santa Maria d'Aorne, port, II, 305.

Santa Maria de las Charcas, town, II, 282.

Santa Rosa de Cosiguiriachi, town, II, 295.

Santiago (River of) formed the limit between Mexico and Mechoacan, and the Otomites and Cicimecs, I, 12—73; II, 227.

Santiago de Buena Esperanza—See *Purificacion.*

Saragates—Inhabitants of Mexico who have no domicile—See *Guachinangos.*

Sarmientos, a rich Indian family at Cholula, I, 186.

Sarsaparilla—Its harvest, III, 36—Amount annually exported from Vera Cruz, IV, 30; from all Mexico in 1802, IV, 37; in 1803, IV, 48; in 1804, IV, 364.

Sausages—Amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44 and 46.

Sea (South)—Is it higher than the Atlantic Ocean? I, 32.

School of mines at Mexico, I, 212—216; II, 51.

Sciences (Physical and exact)—Progress which they have made in Mexico, I, 218.

Segura de la Frontera—See *Tepeadca.*

Sein (Don Salvador) professor at Mexico, III, 243.

Serge—Quantity exported from Mexico in 1803, III, 49.

Serris a tribe of Indians, II, 299.

Serra (Junipero)—His voyage to California, II, 340.

Sesse (M.) one of the heads of the botanical expedition to New Spain, I, 216.

Sharping stones (Dalles)—Amount imported into Mexico in 1803, IV, 45, 46.

Sheep—Their rearing is neglected, III, 50.

Sheep-skins (*tanned*)—Influence which the edict of free trade had on the exportation, IV, 100.

Shoes, amount imported into Vera Cruz in 1802, IV, 36.

Sierra (Provinces of the)—Produce of their mines of gold and silver, III, 353.

Sierra Madre, part of the Cordillera of Mexico, I, 63.

Sierra de los Mimbres, I, 63.

Sierra Nevada—Signification of these words, II, 191 (*).

Sierra de Santa Rosa—Description of that chain of mountains, III, 163.

Signiorage (*Duty of*) paid by the proprietors of mines, III, 328.

Siguenza (Carlos de)—How he fixed the longitude of Mexico, I, xxvi—His maps of New Spain, I, lxxvii, xcvi. His hypothesis respecting the antiquity of the pyramids of Teotihuacan, II, 64 (*).

Silks manufactured in the country, III, 465—Amount annually imported into Vera Cruz, IV, 31; in 1802, IV, 33—35; in 1803, IV, 45, 46; in 1804, IV, 364.

Silver—Quantity annually extracted from the mines of Mexico, III, 146—Veins which contain it, III, 153—See *Mines*—Quantity absorbed by the commerce with India, IV, 339.

Silver in Ingots—Quantity exported annually at an average from Vera Cruz, IV, 29.

Silver (Coined)—Amount exported from Mexico on account of individuals for Spain in 1802, IV, 37; in 1803, IV, 48; for other parts of Spanish America, in 1802, IV, 38; in 1803, IV, 47—On account of the king, IV, 41.

Silver (wrought)—How much there is in Europe, III, 451, and IV, 342—Amount exported from Mexico for Spain in 1802, IV, 37—For other parts of Spanish America, IV, 38.

Singuiluacan, Indian village—Table of births and deaths

from 1750 to 1799, to serve as an example of the method in which the parish priests keep their registers, IV, 289.

Sinaloa—See *Cinaloa.*

Sinu, a river of the kingdom of New Grenada—Its branches serve as an emporium for the contraband trade in gold of Choco and Antioquia, III, 391.

Sisas, impost on the consumption of commodities originally destined to complete the Desague of Nochistongo, II, 140.

Situados, supplies sent from Mexico to the other Spanish colonies—Their annual amount and distribution, IV, 234.

Skins of goats, stags, and bears—Influence which the edict of free trade had on their exportation, IV, 100.

Skins of Beaver—Importance of the trade in this production, IV, 89.

Slaves—In small number in Mexico, I, 14, 230—Species of Indian slaves there, II, 238—See *Poitos.*

Small-pox—Ravages which it commits in Mexico, I, 111—See *Inoculation* and *Vaccine.*

Smith (*Dr. Adam*)—His estimate of the quantity of gold and silver which has flowed into Europe since 1492, III, 408.

Snow—Its limit, I, 74—Manner of transporting it to Vera Cruz, IV, 191—Produce of the duty on the sale of snow, IV, 216.

Soap—Places where it is manufactured, III, 467—Amount annually exported from Vera Cruz, IV, 30—Amount imported at Vera Cruz in 1802, IV, 33; exported from Mexico for other parts of Spanish America, in 1802, IV, 38; in 1803, IV, 49.

Socabon of Nochistongo—See *Desague* and *Nochistongo.*

Socabon del Rey, a level in the Cerro de la Compaña near Tasco, III, 139.

Sochipiltecatl, a rich Indian family at Guaxocingo, I, 186.

Society (Patriotic) of Cuba, for the encouragement of the sciences, I, 211.

Soda—How found, III, 322—Provinces where it abounds, III, 462—Qualities and use of the soda of Xaltocan, III, 484.

Soledad, village, II, 354.

Solis (*Martin de*) charged with the administration of the Desague, II, 142.

Solorzano—His estimate of the gold and silver which have flowed into Europe since 1492, III, 405.

Sombrerete, town, II, 234.

Sonneschmidt (M. Frederic)—His memoirs on the mines of Mexico, I, lxxxviii, III, 252—He discovered meteoric iron at Zacatecas, II, 293; III, 298—Seven heights determined by this traveller, IV, 353 *et seq.*

Sonora, bishoprick—Its revenues, I, 231.

Sonora, intendancy—Its extent, II, 296—Its rivers, II, 298—A part of this intendancy is named la Pimeria, *ibid.*—Its communications with New Mexico and New California, II, 299—Its towns, II, 304—Nomenclature of its reales de minas, III, 125.

Sonora, province, makes a part of the Intendancy of Sonora, II, 297.

Sonora, river, II, 298.

Sonora, town, II, 305.

Sotto la marina, village, II, 282—Was proposed to supply the place of the port of Vera Cruz, I, 82.

Spaniards—Hatred which exists between them and the creoles, I, 205.—Their number in Mexico, I, 206.

Specie in circulation in the New World—Discussion on this subject, III, 430—Amount of its annual accumulation in Mexico, IV, 111.

Spices, amount imported into Mexico in 1803, IV, 44.

Spoons of silver found in the port of Nootka by Cook—

This phenomenon is explained by a passage of the journal of Father Crespi, II, 364.

Stag, species found in New California, II, 350.

Stamps, one of the branches of the public revenues—Their amount, IV, 216.

Starch—Amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.

Statue (Equestrian) of Charles IV; the finest which was ever cast in modern times, I, 213; II, 40.

Steel—Amount of its annual importation into Vera Cruz at an average, IV, 31; in 1802, IV, 34, 35; in 1803, IV, 44—45.

Stockings, quantity imported into Vera Cruz in 1803, IV, 45 and 46.

Stone (Lydian) forming beds in secondary lime-stone, III, 209.

Stones (Sharping)—Amount imported into Vera Cruz in 1802, IV, 33.

Straw (Hats of)—Amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.

Suarez (Bonaventura)—How he fixed the longitude of Mexico, I, xxviii.

Sugar—Amount of its consumption in France, III, 12 (¶); in Mexico, III, 13; exported from Mexico, III, 14. Why the price of that commodity has never increased since the political troubles of Saint Domingo, III, 15—Quantity of sugar imported from Asia, *ibid*—Amount of its annual exportation from Vera Cruz, IV, 30—Amount of its exportation from Mexico for Spain in 1802, IV, 37; in 1803, IV, 46; in 1804, IV, 364; for other parts of Spanish America in 1802, IV, 38; in 1803, IV, 49—Quantity imported into the United States of America in 1800, 1801, and 1802, IV, 314—Quantity drawn by the United States of America, from the Dutch colonies of India, IV, 315—See also *plants and vegetables*.

Sulphur—Province from which it comes, IV, 471.

Surface of New Spain according to the intendancies, I, 280.

Sutaquizan, Indian village, II, 303.

System of Brown—Its application to the yellow fever, IV, 187.

T.

Table-lands of the Cordillera of Mexico, I, 53—Four surrounding Mexico, I 56.

Tacoutche-Tesse (*River of*) or Colombia, one of the points which may serve for communicating with the two seas, I, 19.

Tacuba, town of the Intendancy of Mexico, II, 184.

Tacubaya, town of the Intendancy of Mexico, II, 184.

Talenga, a German amalgamation work, III, 351.

Tallow, amount exported from Mexico in 1802, IV, 38.

Tamaron, Bishop of Durango—His manuscript journal, II, 286.

Tampico river—Its mouth was proposed to supply the place of the port of Vera Cruz, I, 82.

Tancitaro (*Pic de*), II, 209.

Taos, town, II, 317.

Tar—Amount exported from Mexico in 1802, IV, 38; in 1803, IV, 47.

Tarascs, tribe of Indians, II, 222.

Tasco, town of the Intendancy of Mexico, II, 115—Mines of the environs, III, 224.

Tatarrax, a fabulous kingdom, II, 324 (*).

Tea—Quantity annually imported into Europe, II, 444—Its price in China, IV, 341.

Techichi, a dog ate by the Mexicans, III, 47.

Tecolutla, river, II, 258.

Tecuanocugues, a rich Indian family at los Reyes, I, 186.

Tecuichpotzin, daughter of Montezuma II, —Different Mexican families descend from her, II, 72 (*).

Teguantepec, see *Tehuantepec*.

Teguayo, lake—The Aztecs made their first station there, II, 303—It is perhaps the same with Timpanogos, II, 324 (*).

Tehuacan de las Granadas, towns of the intendancy of Puebla, II, 202.

Tehuantepec, isthmus, one of the points by which a communication might be established between the two seas, I, 17; IV, 19.

Tehuantepec, port, II, 242.

Tehuantepec, wind from the north north east, I, 86.

Tehuilotepec, mine of the intendancy of Mexico, II, 189—III, 224.

Teipa, village, II, 211.

Temetzla, mines, II, 203.

Temihtitlan, see *Tenochtitlan*.

Temixtitlan, name given by Cortez to the capital of Mexico, I, 13; II, 11.

Temperature, (*mean*) of the tierras calientes, I, 65, *et seq.*; of the tierras frias of Mexico, I, 66, *et seq.*; of the tierras templadas, I, *ibid*; of New California, II, 340; of Nootka, II, 375; of the most northern part of America, II, 395; of the Havanah, II, 411; of Westro-Botnia, II, 413; of Acapulco, IV, 148—151; of the water of the sea at the surface in the Atlantic Ocean, and in the South Sea, IV, 149; of Cumana, IV, 150; of Guayaquil, IV, 151 (*)—*Minimum*, of mean temperature which the cultivation of the sugar cane, banana, coffee, orange, olive and vine, seem to require, II, 412, *et seq.*—Comparison of the mean temperature of the different months of the year at Mexico, Vera Cruz and Paris, IV, 150, 159, 163, 182—Discussion of the question whether the temperature of the two hemispheres is so different as is generally supposed, IV, 151.

Tempests, description of those of Vera Cruz, I, 84.

Tenateros, class of miners, I, 362—Their muscular strength, III, 239.

Tenochques, one of the names of the Aztecs, II, 11 (*).

Tenochtitlan, antient name of Mexico, I, 12—Different alterations which this name has undergone, II, 11 (*) origin of the name, *ibid*—Description of that town, II, 12—Dikes which connected it with the Continent, *ibid*—It was enlarged by the union with Tlatelolco, II, 26—Its division into four quarters, II, 28—Its destruction, II, 54—See *Mexico*, town.

Tenoxtitlan, see *Tenochtitlan*.

Tenths, (royal) paid by the proprietors of mines, III, 328.

Teocalli, name of the Mexican temples, II, 19—Description of that of Tenochtitlan or Mexico, II, 19—Materials of which it was constructed, II, 21, 64.

Teohuacan de la Mixteca, see *Tehuacan de las Granadas*.

Teopan, see *Teocalli* and *Xocohimilca*.

Teotihuacan, pyramids, II, 63.

Teotihuacan, river, II, 107.

Teotzapotlan, capital of the Zapotecs, II, 235.

Teoyaomiqui, Mexican goddess—Her statue covered with hieroglyphics at Mexico, II, 22, 63.

Tepeaca, town of the marquisate of Cortez, II, 203.

Tepetate, species of clay, II, 129.

Tepeyacac, river, II, 107.

Tepic, town, II, 230.

Tequesquite, Mexican name of the carbonate of soda, II, 34, 233—Province where it abounds, III, 468.

Terreros, (*M.*) see *San Christobal*.

Ternate, military post, II, 299.

Tetela de Xonotla, mines, II, 203.

Tetlepanquetzaltzin last king of Tacuba, hanged by orders of Cortez, II, 57 (*).

Tetzontli, nature of that stone, II, 57.

Texada, (*Don Ignacio*) his manuscript account of the government of the viceroy Espleta, III, 381 (*).

Texas, province, II, 272.

Tezcuco, a projected canal, II, 162—Its dimensions, II, 163.

Tezcuco, lake, II, 14—Difference of its present state from that in the time of Cortez, II, 15—Causes of that difference, II, 29—The effects of evaporation are augmented by the destruction of the trees, II, 32; and especially by the Desâgue de Huehuetoca, II, 33—Its extent and depth, II, 35, 106.

Tezcuco, river, II, 107.

Tezcuco, town—Its population, II, 184—Its cloth manufactures, III, 462.

Tezozomoc, (*Alvarado*) a baptized Indian, author of a manuscript history of Mexico, II, 74 (*).

Thenard, (*M.*) his experiments on asphyxia, IV, 199.

Thread, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 45.

Ticampanba, a German amalgamation work at Requay, III, 351 (*).

Tierras calientes, I, 65.

Tierras frias, I, 66.

Tierras templadas, I, 67.

Tin, mines which furnish it, III, 296—Amount exported from Mexico in 1803, IV, 49.

Tissues, amount annually imported into Vera Cruz, IV, 31.

Tithes, their amount, III, 96.

Tlacahuepan Cuexcotzin, a Mexican divinity, II, 17 (†).

Tlacho, see *Tasco*.

Tlacotlalpan, town, II, 270.

Tlamana, American porters who supplied the place of beasts of burden, III, 47.

Tlaolli, a spirituous liquor made from maize, II, 449.

Tlapuxahua, mines, II, 226.

Tlaquechiuhcan, one of the quarters of Tenochtitlan, II, 28

Tlascala, town—Its manufactures, III, 461.

Tlatelolco, a town founded in 1338, III, 26; joined to Tenochtitlan, *ibid.*

Tlaxcalla, antient republic now making part of the intendancy of Mexico, II, 197—Privileges of the inhabitants of that town, II, 198—Its population, II, 201.

Tobacco, its cultivation in the intendancy of Vera Cruz, II, 253, 270—Restrictions on it since the introduction of the farm, III, 39—Its manufacture is a royal right, III, 466—Amount of the produce of the royal manufactory, *ibid*—Annual sum which this manufacture brings in to the king, IV, 210.

Tobar, (Josef) author of a manuscript on the conquest of Mexico, II, 74 (*).

Tohualicahuatzin, son of Montezuma II,—Stock of Counts de Montezuma and Tula, II, 72 (*).

Toledo, viceroy of Peru—His enumeration of the Indians of Peru, I, 93.

Tollan, the original country of the Toltecs, I, 133.

Tolocan, see *Toluca*.

Tololotlan, river—See *Lerma*.

Tolsa, (Don Manuel) author of the Statue of Charles IV, 40, (*), and of the Sepulchral monument of Cortez, II, 52.

Toluca, town of the intendancy of Mexico, II, 187.

Tomatl, its cultivation in Mexico, III, 505.

Tonalpohuali, civil calendar of the Mexicans, II, 261.

Tonango, (San Miguel) mines, II, 203.

Tonantzin, Mexican goddess, II, 139, *note*.

Tonathiu Ytzaqual, house of the sun, antient pyramid, II, 63.

Topinambours, are not cultivated in Mexico, II, 505.

Torquemada, (Father) employed in the construction of the causeways of Mexico, II, 48.

Torre, (Don Lorenzo de la) inventor of a particular process of amalgamation, III, 267.
Torres, bishop of Yucatan, viceroy of Mexico, II, 142.
Torres, (Don Alonzo de) his voyage, I, xciii.
Tortoise shells, amount imported into Vera Cruz in 1802, IV, 36; in 1803, IV, 47.
Totomostla, mines, II, 242.
Toultecs, their arrival in Mexico, I, 133, 135—Monuments of them remaining at Teotihuacan, II, 64.
Toys, manufactured in Mexico, III, 488.
Trapiches, small cloth manufactures at Queretaro, III, 462.
Tribunal, (general) of the body of miners—Its establishment, III, 324.
Tribute, capitation paid by the Indians, I, 187.
Trinidad Island—Supply which it annually draws from Mexico for expence of administration, IV, 234.
Tochoutki, people of Russian America, II, 390.
Tochugatschi, people of Russian America, II, 392.
Tupac-Amaru, pretended Inca of Peru—His revolt and death, I, 201.
Turkey, an indigenous animal of Mexico, III, 55.
Tuxtla, volcano, II, 257.
Tzapoteca, a mountainous country, II, 237.
Tzinteotl, Mexican goddess, II, 139, *note*.
Tzintzontzan, capital of the kingdom of Michuacan, II, 208, 225.
Tzotzomatzin, foretold to Ahuitzotl the danger to which the aqueduct of Huitzilopochco exposed the capital, II, 118.

U.

Ugalachmiuti, a people of Russian America, II, 393.
Ugarte, (Father Juan) his voyage to California, II, 323—331.

Ugarte, (Don Tomas) how he determined the position of Vera Cruz, I, xxxii.

Ulloa, (Don Antonio) governor of Huancavelica, III, 313—He conducted to Vera Cruz the last fleet which arrived there before the trade of America was declared free, IV, 98.

Ulloa, (Don Francisco de) surveyed the coast of California to the Rio Colorado, II, 322.

Ulua, (San Juan) fort, II, 262.

Unanue, (Don Hipolito) introduced vaccination into Lima, I, 115.

United States of America, their exports from 1799 to 1803, IV, 305—Value of the exports in 1806, IV, 317—Payments made at the treasury by the receivers of the customs in 1802 and 1803, IV, 309—Tonnage of their ships from 1799 to 1802, IV, 312—Comparative state of the American and foreign tonnage employed in their commerce, IV, 313—Importation of wine and sugar in 1800, 1801, and 1802, IV, 314—Quantity of wine and sugar exported from the ports of the United States in 1800, 1801, and 1802, IV, 316—Details respecting the share which the different provinces took in the exportation, IV, 318—Note of M. Gallatin on the extent and population of the United States before the acquisition of Louisiana, IV, 324—Commerce which they carried on with Mexico between 1805 and 1806, IV, 366.

University of Mexico, its buildings, II, 51.

Urutia, (Don Carlos de) his map of a part of New Spain, I, lxxvi.

Ustariz, his estimate of the quantity of precious metals which entered Europe since 1492, III, 403.

Uturicut, Indian village, II, 303.

V.

Vaccine, introduced into Mexico, I, 112—Exists naturally in the country, I, 113.

Valderas, (*Compuerta de*) lock of the Desague de Huehuetoca, II, 151.

Valdes, (*Don Antonio*) minister of Spain—His attempt to regulate the distribution of mercury, III, 285.

Valdes, (*Don Cayetano*) his voyage to California and Nootka, II, 342, 381.

Valencia, (*Count de*) see *Obregon*.

Valenciana, mines of the district of Guanaxuato, II, 205—Description of these mines, III, 186, *et seq.*—Comparison with the mine of Himmelsfürst, III, 203.

Valenzia, (*Don Vicente*) I, lxxxviii—His description of the mines of Zacatecas, II, 232.

Valladares, (*Don Joseph Sarmiento*) Count de Montezuma, viceroy of Mexico, II, 104 (†).

Valladolid, bishoprick—Its revenues, I, 231.

Valladolid, intendancy—Number of ecclesiastics which it contains, I, 230 (*)—Details respecting this intendancy, II, 208—Its extent, *ibid.*—Its climate, II, 209—Revolution which it experienced by a volcanic eruption, II, 212—Its relative population, II, 223—Its towns, II, 224—Enumeration of its reales de minas, II, 226; III, 126.

Valladolid, town of the intendancy of that name—Proportion between the casts who inhabit it, and between the sexes, I, 254.

Valladolid, town of the Peninsula of Yucatan, II, 249.

Valladolid de Michoacan, town, II, 224.

Valle, (*Marquis del*) title of Cortez, I, 227; II, 7 (†).

Vallejos, intendant of Cuenca—His operations respecting the mercury mines, III, 308.

Valmis, (Don Antonio) introduced vaccination into the Spanish possessions, I, 113.

Vancouver, his determination of the position of Monterey, I, lvi.

Vanilla, province which produces it, II, 252—Of its cultivation, III, 27—Amount of its annual exportation from Vera Cruz, IV, 30—Amount exported from Mexico in 1802, IV, 37; in 1803, IV, 48—Influence which the edict of free trade had on its exportation, IV, 100.

Vara, (Castilian) its proportion to the Toise, II, 108 (*).

Vara, (Mexican) its proportion to the *pied du roi*, II, 63 (†).

Vauquelin, (*M.*) analysed a Mexican aerolithe, III, 293—His researches respecting the Tan of Gelatine and Albumine, IV, 157.

Vegetables, mentioned in this work:

Adansoma digitata, II, 197.

Agave Americana, II, 520—529; A. cubensis, II, 520.

Amyris, IV, 191.

Andromeda, II, 372.

Anona cherimolia, II, 202.

Arachis hypogea, II, 505.

Arbutus perotensis, III, 59; IV, 337.

Artocarpus incisa, II, 514.

Arum macrorhizon, II, 437.

Asparagus, II, 512.

Atriplex, IV, 484.

Avena sativa, II, 453, 484, 508.

Bonplandia trifoliata, II, 402 (*).

Brassica, II, 509.

Bromelia ananas, III, 511 (*).

Cactus cylindricus, II, 328; C. coccinilifer, III, 71,

et seq.; C. opuntia, II, 520; III, 70; C. pereskia, III, 70.
Cæsalpinia Brasiliensis, II, 248.
Calicocca, IV, 120.
Cannabis sativa, III, 21: C. indica, III, 21; IV, 337.
Capsicum annuum. II, 505; C. baccatum, II, 505; C. frutescens *ibid.*
Carica, II, 402 (*).
Cecropia peltata, II, 402 (*).
Cedrela odorata, III, 489 (*) IV, 24.
Cestrum mutisii, III, 46; IV, 336.
Cheirostemum platanifolium, I, 173.
Chenopodium quinoa, I, 53; II, 506.
Cicer, II, 509.
Cinchona, II, 402 (*); IV, 189.
Citrus aurantium, II, 516; C. decumana, *ibid.* (*); C. medica *ibid*; C. trifoliata, *ibid.* IV, 336.
Coccolloba uvifera, IV, 156.
Cocos nucifera, IV, 156.
Coffea arabica, III, 21.
Commiphora Madagascarensis, III, 424.
Convolvulus batatas, II, 437, 502. C. chrysorhizus, II, 437—503; C. jalapa, II, 503 (†); III, 37; C. plantanifolius, II, 503; C. edulis, II, 503.
Contarea, II, 402 (*).
Cupressus disticha, II, 42, 196, 237.
Cycas circinnalis, II, 437; IV, 335.

Danais, II, 402 (*).
Dioscorea alata, II, 437, 500, 503; IV, 336.
Dracontium polyphyllum, II, 437.

Epidendrum Vanilla, II, 252; III, 28 *et seq.*
Erythroxylon cocca, II, 424.
Exostema, II, 401.

Filices arborescentes, II, 401.

Garcinia Mangostana, II, 516 (*).
Gossypium, III, 18.
Gratiola, III, 484.
Gyrocarpus Mexicana, I, 173 (*).

Hæmatoxylon Campechianum, II, 247.
Helianthus tuberosus, II, 505; H. annuus, II, 506.
Hevea, II, 402 (*).
Hordeum tuca, II, 441; H. vulgare, II, 453, 433.

Indigofera tinctoria, III, 45; I. argentea, *ibid*; I. anil, *ibid*; I. disperma, *ibid*.

Jatropha manihot, II, 415, 436 *et seq*; J. janipha, II, 431; J. carthaginensis, II, 432.

Laurus persea, III, 58.
Limonia trifoliata, II, 514; IV, 336.
Linnea borealis, II, 373.
Liquidambar styraciflua, II, 251.
Lobelia, II, 402 (*).

Medicavo sativa, I, 38.
Mikania quaco, III, 41.
Milium nigricans, I, 38.
Morus acuminata, III, 57; M. rubra, *ibid*.
Musa paradisiaca, II, 417; M. sapientum, *ibid*; M. regia, *ibid*; M. mensaria, *ibid*.
Musænda bracteolata, II, 402 (*).
Myrtus pimenta, II, 253.

Nicotiana tabacum III, 41, *et seq*. N. rustica, III, 41.

Olea Europaea, II, 241; II, 516.
Oryza sativa, II, 506, *et seq*.
Oxalis tuberosa, II, 500.

Padus capuli, II, 513.
Pæderia, II, 402 (*).
Paspalum purpureum, I, 38.
Passiflora, II, 202, 511.
Phaseolus, II, 340, 509.
Phormium tenax, II, 513.
Pinus, II, 252, 354; IV, 85.
Pisum sativum, II, 510.
Polygonum fagopyrum, II, 437.
Portlandia hexandra, II, 402 (*).
Pothos, IV, 156.
Prunus avium, II, 416, IV, 335; P. cerasus, IV, 335.
Psychotria emetica, IV, 120 (*).

Quercus, II, 252.

Rhizophora mangle, II, 509.
Rosa Mexicana, II, 372.

Sacharum violaceum, II, 527; S. officinarum, III, 2, *et seq.*
Secale cereale, II, 453.
Smilax sarsaparilla, II, 253; III, 36, (†).
Solanum tuberosum, II, 484, 498; S. cari, II, 490; S. lycopersicum, II, 505.
Spondias, II, 513.
Switenia febrifuga, II, 402 (*); S. mahogany, III, 389; IV, 24.

Tacca pinnatifida, II, 437.
Tacsonia, II, 511.
Theobroma cacao, II, 425; III, 23, *et seq.*; T. bicolor, III, 23 (*).
Tigridia cacomite, II, 505.
Tithymaloidei, II, 437; IV, 156.
Triphasea aurantiola, II, 514.

Triticum compositum, II, 442; T. mechuacanense, II, 442; T. hybernum, II, 453, 482, 490, 508; T. spelta, II, 453.
Tropæolum esculentum, II, 496; T. peregrinum, II, 496 (*).

Urceola elastica, II, 402, (*).

Vaccinium, II, 372.
Viola emetica, IV, 120 (*).
Vitis vinifera, II, 317, 341, 517.

Zea maize, II, 96, II, 440, *et seq.* 486, 508; Z. curagua, II, 441, 446.
Zizania, II, 486; IV, 336.

Vehities, people of California, II, 332.
Velasco (Don Luis de) el segundo, Marquis de Salinas, viceroy of Mexico, II, 114; orders the Desague de Huehuetoca to be commenced, II, 122; destines the produce of the Sisa for it, II, 140; establishes cloth manufactories at Tezcuco, III, 262.
Velasco (Don Luis de) el Viejo, or *Primero*, viceroy of Mexico, II, 114—Founds the town of Durango, II, 308.
Velasco, (Don Pedro Fernandez) introduces amalgamation into Potosi, III, 377.
Velasquez, (Don Joacquin) Cardenas y Leon, director of the supreme tribunal of mines at Mexico—How he determined the longitude of that town, I, xxiv—Survey and trigonometrical operation executed by that astronomer in 1773, I, xlix—His voyage to California, I, lii—His maps of New Spain, I, lxxvii—Chain of his triangles, I, civ—Biographical account of this celebrated man, II, 219, 220—His survey of the waters of the canal of Huehuetoca, II, 163 (‡)—His researches

respecting the project of Mendez, for preserving Mexico from inundation, II, 166.

Velosa, (Gonzalo de) constructed the first sugar mills in Mexico, III, 3.

Venados, stags of New California, II, 351.

Veneg's, (Father) his notions respecting California, II, 334 (*).

Vera Cruz, intendancy—Its extent and climate, II, 250—Its productions, II, 252—Its population, II, 255—Its mountains, II, 257—Its antiquities, II, 258—Its towns, II, 261—Its mines, II, 270—Its reales de minas, III, 128.

Vera Cruz, town—There were three towns of that name—See *Villa rica de la Vera Cruz, Vera Cruz vieja,* and *Vera Cruz,* port.

Vera Cruz, port—Its geographical position, I, xxxi—Plan of this port, I, cvi—Description of the town, II, 261—History of its construction, II, 262—Causes of the insalubrity of its climate, II, 264—IV, 155—Annual amount of the commerce of this port, IV, 29 *et seq.*—Amount of the importation of goods the produce of Spain in 1802, IV, 35; in 1803, IV, 46—Amount of the importation of goods of the Spanish colonies in 1802, IV, 36; in 1803, IV, 47; exportation for Spain in 1802, IV, 37; in 1803, IV, 48; for other parts of Spanish America in 1802, IV, 38; in 1803, IV, 49—Balance of its commerce in 1802, IV, 39; in 1803, IV, 50—Annual balance, IV, 118—This town is the principal seat of the yellow fever, IV, 132—Quantity of rain which falls there annually, IV, 160—Its mean temperature, IV, 163.

Vera Cruz, vieja, town, II, 262.

Veraguas, (Duke de) see *Colon.*

Vermicelli, amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Vertideros (Compuerta de)—Lock of the Desague de Huehuetoca, II, 151.

Veta Biscaina de Real del Monte, a rich vein in the Intendancy of Mexico, II, 189; III, 215.

Vezou, juice of the sugar cane, III, 11.

Viceroys of Mexico—Their power and revenues, IV, 231.

Victoria, town, II, 270.

Villa Hermosa, town, II, 270.

Villalobos (Ruy Lopez de) discovers S. Benedicto, I, xcii.

Villarica de la Vera Cruz, colony founded by Cortez, II, 263.

Villalta, II, 242.

Villena (Marquis de) viceroy of Mexico, charges Father Flores with the direction of the hydraulical operations, II, 141.

Vine—Its cultivation at Parras, II, 295: prohibited by the Court of Spain, II, 517 *et seq.*

Vinegar—Amount imported into Vera Cruz in 1802, IV, 33; in 1803, IV, 44.

Virgins (miraculous) of Guadalupe and Remedios, II, 138 (†).

Virgin Islands—Quantity of sugar exported from, III, 14.

Viscaino—Sebastian takes possession of the peninsula of California, II, 330—His voyage to New California, II, 338—Names the chief place of the country Monterey, II, 354—Care with which he surveyed the coasts, II, 361.

Visitadores—What that employment is, I, 220 (†).

Vizlipuzli—See *Huitzilopochtli.*

Volcanoes of Mexico, I, cxxii, 78.

Vomito prieto (black vomiting) has little influence on the state of the population of Mexico, I, 128—See *Yellow fever.*

W.

Wactipuran, a Californian divinity, II, 332.

Wal (Don Manuel)—His project for rendering the province of Venezuela independent, IV, 265.

Waters (Mineral) in the valley of Tenochtitlan, II, 101.

Wax—Quantity produced by Mexico, III, 61—Amount annually imported into Vera Cruz. IV, 32—Amount imported into Vera Cruz in 1802, IV, 36—Exported from Mexico in 1802, IV, 38; in 1803, IV, 47.

Webs from hemp and flax are not manufactured in Mexico, III, 466—Annual amount of their importation at Vera Cruz, IV, 31—Amount of their importation at Vera Cruz in 1802, IV, 33, 35; in 1803, IV, 46.

Werner (M.)—His theory of the origin of veins, III, 187 (*).

Whale fishery, III, 83.

Wheat—See *Cerealia.*

Whites, all enjoy the same rights by law, I, 204—Inequality introduced among them by the government, *ibid*—Their number, I, 206; compared with that of the West India Islands, I, 207; with that of other parts of the New Continent, I, 209—Progress of civilization among them, I, 210—Their wealth, I, 223—See also *Chapetones* and *Creoles.*

Wilkinson (General) communicates to the author a map of the Rio del Norte and the mouth of the Rio Sabino, I, lxxx.

Wine, amount annually imported into Vera Cruz, IV, 32—Amount imported into Vera Cruz in 1802, IV, 33, 35; in 1803, IV, 44—Quantity imported into the United States of America in 1800, 1801, and 1804, IV, 314; quantity exported, IV, 316.

Worms (silk), introduced by Cortez, III, 57.

Wood of Campeachy—Provinces which furnish it, II, 247—

Amount annually exported from Vera Cruz, IV, 31; in 1802, IV, 36; in 1803, IV, 47—Exported for other parts of Spanish America in 1803, IV, 48—Influence which the edict of free trade had on its exportation, IV, 100.

Wood for furniture—Quantity exported from Mexico in 1803, IV, 48.

Wood-tin—Mines which furnish it, III, 296.

Woolens—Amount imported into Vera Cruz in 1802, IV, 34, 35; exported for other parts of Spanish America in 1802, IV, 38; in 1803, IV, 45 and 46.

X.

Xacajotzin, or the younger, surname of Montezuma II, II, 9 (‡).

Xalapa, town, II, 268.

Xaltilolco—See *Tlatelolco*.

Xaltocan, lake, II, 110.

Xamapa, river—Project for bringing its water to Vera Cruz, II, 266.

Xampolan, Indian village, II, 249.

Xico, a village situated in the lake of Chalco, II, 111.

Xicotlan, saltworks of the intendancy of Puebla.

Ximenez (Fortun), pilot of Grixalva in his voyage to California, II, 321.

Xochicalco, military entrenchment, antient monument, II, 69.

Xochimilca, one of the quarters of Tenochtitlan, II, 28.

Xochimilco, lake, II, 28.

Xorullo—See *Jorullo*.

Y.

Yabipais, a tribe of Indians, II, 316.

Yanos, third station of the Aztecs, II, 302.

Yaquesila, river, II, 315.
Yaqui, river, II, 298.
Yauricocha, mines, III, 341.
Yetl, Mexican name for tobacco, III, 41.
Ynguaran, mines, II, 226.
Yniesta—See *Iniesta*.
Yniesto (Ildefonso)—His measurement of the distance from the Lake of Tezcuco to the cascade of Tula, IV, 209.
Ysla (Juan de) colleague of Enrico Martinez, II, 123.
Yturby (Juan)—His expedition to California, 329.
Yturrigarray (Don Josef de)—Viceroy of Mexico, II, 162, IV, 6.
Yucatan—Bishoprick—Its revenues, II, 231.
Yucatan, province, called at first New Spain, I, 11—It forms the Intendancy of Merida, II, 242.
Yutas, a tribe of Indians, II, 287.
Yxtepexi, mines, II, 242.

Z.

Zacatecas, Intendancy—Its extent, II, 232—Its climate, *ibid*—Its Reales de Minas, III, 120, 204—Their geological constitution, *ibid*—Metals which they furnish, III, 332.
Zacatecas, town, II, 233—*Aerolithe* found there, II, 385.
Zacatula, sea port in the Intendancy of Mexico, II, 293.
Zacatula, river, I, 73.
Zapata, a baptized Indian, author of a manuscript history on Mexico, II, 74 (*).
Zapoteca—See *Tzapoteca*.
Zapotecs, a Mexican people, II, 235.
Zambos, descendants of Negroes and Indians, I, 130; II, 246.
Zambos prietos, I, 246.

Zarate (*Father Geronimo de*) was employed in the reconstruction of the causeways of Mexico, II, 48.

Zarria (*Francisco Xavier de*)—How he determined the position of Zacatecas, I, lxvi.

Zepeda (*Barnabe Antonio de*) discovers the mines of Catorce, II, 283—His operations in these mines, III, 211.

Zepeda—His history of the Desague, II, 74 (*).

Zimapan, mines of the Intendancy of Mexico, II, 189.

Zinc—Mines which furnish it, III, 299.

Zitaquaro, mines, II, 226.

Zitlaltepec (*Laguna de*) the western part of the lake of Zumpango, II, 111.

Zolaga, mines, II, 242.

Zomelahuacan, mines, II, 270.

Zoology—Animals mentioned in this work:

Anas moschata, III, 56.

Apis mellifica, III, 62.

Bombyx mori, II, 58 *et seq.*; B. madroño, III, 59.

Bos taurus, III, 46, 48; B. Americanus, III, 46; B. Moschatus, *ibid.*

Canis familiaris, III, 47.

Capra berendo, II, 327.

Coccus cacti, III, 62 *et seq.*; IV, 337.

Crax ingra, III, 52; C. Pauxi, III, 53; C. Globicera *ibid.*

Haliotis iris, IV, 89; H. Australis, *ibid.*

Meleagris gallo-pavo, III, 53, 55.

Melipone fasciata, III, 61.

Murex, III, 83.

Numidia meleagris, III, 56.

Ostrea margaritifera, III, 79 *et seq.*
Ovis aries, III, 51.

Penelope, III, 53.
Phascanus gallus, III, 53 *et seq.*
Physeter macrocephalus, III, 83.
Psittacus, III, 53.

Siren pisciformis, IV, 146.
Sus tajassu, III, 51.

Termes fatalis, IV, 135.

Ursus caudivolvula, III, 52.

Zumpango, lake, II, 107; divided into two basins, II, 112.
Zuñiga (Juana de) spouse of Cortez, equips a flotilla to go in search of her husband, II, 322.
Zurita, author of a manuscript on the conquest of Mexico, II, 74 (*).

H. Bryer, Printer,
Bridge-Street, Blackfriars, London.

NEW WORKS

PRINTED FOR

LONGMAN, HURST, REES, ORME, AND BROWN,

PATERNOSTER ROW, LONDON.

A JOURNEY through PERSIA, ARMENIA, ASIA MINOR to CONSTANTINOPLE, in the year 1808 and 1809, in which is included some Account of the Proceedings of His Majesty's Mission under Sir Harford Jones, Bart. K. C. to the Court of the King of Persia. By JAMES MORIER, His Majesty's Secretary of Embassy to the Court of Persia. In one Volume Quarto (with Twenty-five Engravings from the Designs of the Author, a plate of Inscriptions, and three Maps; one from the Observations of Captain James Sutherland, and two Drawn by Mr. Morier and Major Rennel.)

TRAVELS in the Island of ICELAND, during the Summer of the Year 1810, in one Volume 4to. with a number of Engravings finely coloured, and two Maps. By Sir George Mackenzie, Bart. F. R S. Price 3*l.* 3*s.* bds.

THE HISTORY of the BRAZILS. By R. Southey. Vol. 1st. 4to. price 2*l.* 2*s.* boards.

A COLLECTION of VOYAGES and TRAVELS in EUROPE and ASIA, being the first portion of a General Collection of Voyages and Travels; forming a complete History of the origin and progress of discovery, by Sea and Land, from the earliest ages to the present time. Preceded by an Historical Introduction, and critical Catalogue of Books of Voyages and Travels, and illustrated and adorned with numerous Engravings. By JOHN PINKERTON, Author of "Modern Geography," &c.

00037721

Digitized with financial assistance from the
Government of Maharashtra
on 04 January, 2016